INSTALLATION AND OPERATION MANUAL

ASMi-52CD

2/4-Wire Dual SHDSL Modem Card

Version 1.0

LRS-24 Module

RAD
data communications
Innovative Access Solutions

ASMi-52CD

2/4-Wire Dual SHDSL Modem Card

Version 1.0

Installation and Operation Manual

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For further information contact RAD at the address below or contact your local distributor.

International Headquarters
RAD Data Communications Ltd.

24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel: 972-3-6458181
Fax: 972-3-6498250, 6474436
E-mail: market@rad.com

North America Headquarters
RAD Data Communications Inc.

900 Corporate Drive
Mahwah, NJ 07430, USA
Tel: (201) 5291100, Toll free: 1-800-4447234
Fax: (201) 5295777
E-mail: market@radusa.com

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To facilitate the reuse, recycling and other forms of recovery of waste equipment in protecting the environment, the owner of this RAD product is required to refrain from disposing of this product as unsorted municipal waste at the end of its life cycle. Upon termination of the unit's use, customers should provide for its collection for reuse, recycling or other form of environmentally conscientious disposal.

General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

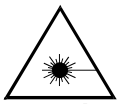
Safety Symbols

Warning

This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.

Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.

Protective earth: the marked lug or terminal should be connected to the building protective earth bus.



Warning

Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached.

Please observe the following precautions:

- Before turning on the equipment, make sure that the fiber optic cable is intact and is connected to the transmitter.
- Do not attempt to adjust the laser drive current.
- Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.
- The use of optical devices with the equipment will increase eye hazard.
- Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.

ATTENTION: The laser beam may be invisible!

In some cases, the users may insert their own SFP laser transceivers into the product. Users are alerted that RAD cannot be held responsible for any damage that may result if non-compliant transceivers are used. In particular, users are warned to use only agency approved products that comply with the local laser safety regulations for Class 1 laser products.

Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective earth terminal. If an earth lug is provided on the product, it should be connected to the protective earth at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in earthed racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Connecting AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

In cases when the power distribution system is IT type, the switch must disconnect both poles simultaneously.

Connecting DC Power

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC power systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC power supply is electrically isolated from any AC source and that the installation complies with the local codes.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Before connecting the DC supply wires, ensure that power is removed from the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

If the DC power supply is floating, the switch must disconnect both poles simultaneously.

Connecting Data and Telecommunications Cables

Data and telecommunication interfaces are classified according to their safety status.

The following table lists the status of several standard interfaces. If the status of a given port differs from the standard one, a notice will be given in the manual.

Ports	Safety Status	
V.11, V.28, V.35, V.36, RS-530, X.21, 10 BaseT, 100 BaseT, Unbalanced E1, E2, E3, STM, DS-2, DS-3, S-Interface ISDN, Analog voice E&M	SELV	Safety Extra Low Voltage: Ports which do not present a safety hazard. Usually up to 30 VAC or 60 VDC.
xDSL (without feeding voltage), Balanced E1, T1, Sub E1/T1	TNV-1	Telecommunication Network Voltage-1: Ports whose normal operating voltage is within the limits of SELV, on which overvoltages from telecommunications networks are possible.
FXS (Foreign Exchange Subscriber)	TNV-2	Telecommunication Network Voltage-2: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are not possible. These ports are not permitted to be directly connected to external telephone and data lines.
FXO (Foreign Exchange Office), xDSL (with feeding voltage), U-Interface ISDN	TNV-3	Telecommunication Network Voltage-3: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are possible.

Always connect a given port to a port of the same safety status. If in doubt, seek the assistance of a qualified safety engineer.

Always make sure that the equipment is grounded before connecting telecommunication cables. Do not disconnect the ground connection before disconnecting all telecommunications cables.

Some SELV and non-SELV circuits use the same connectors. Use caution when connecting cables. Extra caution should be exercised during thunderstorms.

When using shielded or coaxial cables, verify that there is a good ground connection at both ends. The earthing and bonding of the ground connections should comply with the local codes.

The telecommunication wiring in the building may be damaged or present a fire hazard in case of contact between exposed external wires and the AC power lines. In order to reduce the risk,

there are restrictions on the diameter of wires in the telecom cables, between the equipment and the mating connectors.

Caution To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cords.

Attention Pour réduire les risques s'incendie, utiliser seulement des conducteurs de télécommunications 26 AWG ou de section supérieure.

Some ports are suitable for connection to intra-building or non-exposed wiring or cabling only. In such cases, a notice will be given in the installation instructions.

Do not attempt to tamper with any carrier-provided equipment or connection hardware.

Electromagnetic Compatibility (EMC)

The equipment is designed and approved to comply with the electromagnetic regulations of major regulatory bodies. The following instructions may enhance the performance of the equipment and will provide better protection against excessive emission and better immunity against disturbances.

A good earth connection is essential. When installing the equipment in a rack, make sure to remove all traces of paint from the mounting points. Use suitable lock-washers and torque. If an external grounding lug is provided, connect it to the earth bus using braided wire as short as possible.

The equipment is designed to comply with EMC requirements when connecting it with unshielded twisted pair (UTP) cables. However, the use of shielded wires is always recommended, especially for high-rate data. In some cases, when unshielded wires are used, ferrite cores should be installed on certain cables. In such cases, special instructions are provided in the manual.

Disconnect all wires which are not in permanent use, such as cables used for one-time configuration.

The compliance of the equipment with the regulations for conducted emission on the data lines is dependent on the cable quality. The emission is tested for UTP with 80 dB longitudinal conversion loss (LCL).

Unless otherwise specified or described in the manual, TNV-1 and TNV-3 ports provide secondary protection against surges on the data lines. Primary protectors should be provided in the building installation.

The equipment is designed to provide adequate protection against electro-static discharge (ESD). However, it is good working practice to use caution when connecting cables terminated with plastic connectors (without a grounded metal hood, such as flat cables) to sensitive data lines. Before connecting such cables, discharge yourself by touching earth ground or wear an ESD preventive wrist strap.

FCC-15 User Information

This equipment has been tested and found to comply with the limits of the Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Installation and Operation manual, may cause harmful interference to the radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Emission Requirements

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Warning per EN 55022 (CISPR-22)

Warning	This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user will be required to take adequate measures.
Avertissement	Cet appareil est un appareil de Classe A. Dans un environnement résidentiel, cet appareil peut provoquer des brouillages radioélectriques. Dans ces cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées.
Achtung	Das vorliegende Gerät fällt unter die Funkstörgrenzwertklasse A. In Wohngebieten können beim Betrieb dieses Gerätes Rundfunkströrungen auftreten, für deren Behebung der Benutzer verantwortlich ist.

Quick Start Guide

If you are familiar with ASMi-52CD, use this guide to prepare the unit for operation.

1. Installing ASMi-52CD

➤ To install the ASMi-52CD card:

1. Set the JP10 jumper according to your application: Y (Connect) or N (Disconnect).
2. Check that the JP8 jumper cap is installed over pin 1, enabling the Watchdog software.
3. Insert the ASMi-52CD card into a slot of the LRS-24 chassis.
4. Insert the interface module into the upper section of LRS-24F or back of LRS-24B.
5. Connect the line and DCE cables.

2. Configuring ASMi-52CD

Accessing the Supervisory Terminal

➤ To start the communication session:

1. Connect the terminal to the CM-2 RS-232 connector of the LRS-24 chassis.
2. Power up the hub.

   The opening screen appears, followed by the **CM2>** prompt.

➤ To access the Modem Setup menu:

1. From the Main menu, select **Modem Parameters**.

   The following message appears:

   Please enter the slot number (1-12).
2. Type the slot number of the ASMi-52CD card and press **<Enter>**.

   The Modem Setup menu appears.

Configuring the Clock Source

➤ To configure the clock source:

- In the Modem Setup menu, move the cursor to **CLOCK SOURCE LOC/REM** field by pressing **<Tab>** and select the clock source for the selected modem by pressing **<f>** or **<b>**.

Configuring the DTE Interface

If the ASMi-52CD includes a serial or E1 DTE interface, configure the appropriate parameters.

Configuring the Serial Interface

➤ To configure the serial interface:

- In the Modem Setup menu, move the cursor to **DATA RATE** field by pressing **<Tab>** and select the desired transmission rate by pressing **<f>** or **<b>**.

Configuring the E1 Interface

➤ To configure the E1 parameters:

1. In the Modem Setup menu, move the cursor to **NEXT PARMETERS (E1)** field by pressing **<Tab>** and select **YES** by pressing **<f>** or **<b>**.

   The Modem Setup menu: E1 Parameters screen appears.

2. Configure the following E1 parameters:
   - Framing mode
   - Sync (sync loss recovery time)
   - CRC4 error checking
   - Idle code
   - E1 timeslots: Assign each E1 timeslot to carry data or idle code.

Note

- *Timeslot 0 may be looped or transparent.*
- *When operating with G732S framing, timeslot 0 is always transparent and timeslot 16 is always connected.*
- *When operating opposite ASMi-52CD with V.35 interface, assign at least six timeslots, including timeslot 0 to carry data.*

Configuring the Line Parameters

➤ To configure the line parameters:

1. If you have configured E1 parameters, press <ESC> to return to the main menu, and then repeat the steps above to access the Modem Setup menu.
2. In the Modem Setup menu, move the cursor to **NEXT PARMETERS (LINE)** field by pressing **<Tab>** and select **YES** by pressing **<f>** or **<b>**.

The Modem Setup menu: Line Parameters screen appears.

3. Configure the following line parameters:
   - Power backoff
   - Snext margin, if line probing is set to adaptive
   - Current margin, if line probing is set to adaptive
   - Power spectral density (when line probing set to fixed only)
   - Line probing
   - Port clock source
   - Number of wires in the SHDSL line
   - Transmission mode
   - Loop attenuation threshold
   - SNR margin threshold.

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Appendix E. IR-ETH/Q Ethernet Card

Appendix F. IR-ETH/QN Ethernet/Fast Ethernet Card

Appendix G. IR-IP Interface Card

Chapter 1
Introduction

1.1 Overview

ASMi-52CD is an SHDSL dual modem card, which operates in full-duplex over 2/4-wire lines and offers a cost-effective solution for delivering digital data to customer premises over the existing copper cables. ASMi-52CD handles multiple data rates in the range of 64–4608 kbps. ASMi-52CD uses TC-PAM coding and complies with the ITU-T G.991.2 requirements. The card supports the following interfaces:

- Ethernet bridge (IR-ETH)
- Ethernet bridge with VLAN support (IR-ETH/Q)
- Ethernet/Fast Ethernet bridge with VLAN support (IR-ETH/QN)
- IP router (IR-IP)
- Serial interfaces: V.35, X.21, or RS-530
- E1 (G.704).

ASMi-52CD is intended for installation in LRS-24 (a 12-slot chassis offered by RAD) that is managed by the RADview SNMP management tool, Telnet or an ASCII terminal. The card can be removed and re-inserted without powering down the system and without affecting operation of other modules in the system.

Product Options

Chassis Type

ASMi-52CD can be installed in the ANSI and ETSI-type LRS-24 modem racks:

- ASMi-52CDF for an ETSI-type LRS-24 modem rack
- ASMi-52CDB for an ANSI-type LRS-24 modem rack.

Line Interface

- ASMi-52CD with 2-wire line interface
- ASMi-52CD/4 with 4-wire line interface.

Application

ASMi-52CD can establish a communication link with an ASMi-52 standalone modem. *Figure 1-1* illustrates an application, in which a single ASMi-52CD card operates opposite two standalone ASMi-52 modems, providing connection for two pairs of LANs over 2-wire link. In this application the LRS-24 modem rack is managed by RADview SNMP management station.

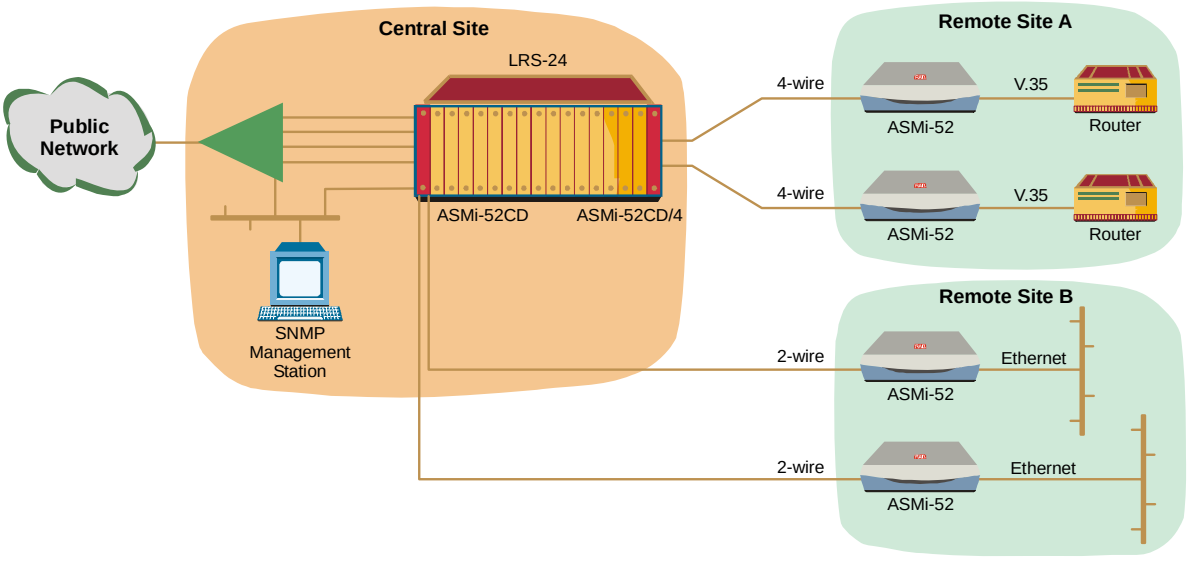


Figure 1-1. Central Site Application with SNMP Management Application

Features

Line Interface

ASMi-52CD extends the range of data transmission over 2/4-wire lines up to 7.1 km (4.4 miles), by employing SHDSL TC-PAM technology. ASMi-52CD operation complies with the requirements of the ITU-T G.991.2 standard. 4-wire ASMi-52CD units can be configured to operate over 4-wire or 2-wire lines. *Table 1-1* lists typical ASMi-52CD ranges over 2/4-wire 26 AWG line.

Table 1-1. Typical ASMi-52CD Ranges

Data Rate	**2-wire**		**4-wire**	
[kbps]	[km]	[miles]	[km]	[miles]
64	7.0	4.3	–	–
128	7.0	4.3	7.1	4.4
256	7.0	4.3	6.2	3.8
512	5.7	3.5	7.1	4.4
768	5.0	3.1	6.4	3.9
1024	4.2	2.6	5.7	3.5
2048	3.3	2.0	4.2	2.0
2304	3.2	1.9	–	–
4608	–	–	2.8	1.7

DTE Interface

ASMi-52CD with 4-wire line interface supports the following DTE interfaces:

- V.35
- X.21
- RS-530
- E1 (G.704).

Both 2- and 4-wire versions support the following interfaces:

- IR-ETH (Ethernet bridge)
- IR-ETH/Q (Ethernet bridge with VLAN support)
- IR-ETH/QN (Ethernet/Fast Ethernet bridge with VLAN support)
- IR-IP (IP router).

Table 1-2 lists the ASMi-52CD interface versions with their appropriate interface modules and DCE connectors.

Table 1-2. ASMi-52CD Digital Interface Versions

DTE Interface	Interface Module	Connector	
		DTE	Line
IR-ETH, IR-ETH/Q, IR-ETH/QN	LRSI-F-14 (for ASMi-52CDF) LRSI-B-14 (for ASMi-52CDB)	Two RJ-45s	Two RJ-45s
IR-IP	LRSI-F-23 (for ASMi-52CDF) LRSI-B-23 (for ASMi-52CDB)	Two RJ-45s	Two RJ-45s
V.35, X.21, RS-530	LRSI-F-5 (for ASMi-52CDF) LRSI-B-5 (for ASMi-52CDB)	Two SCSI-26s	Two RJ-45s
E1 (G.704) (balanced)	LRSI-F-24 (for ASMi-52CDF) LRSI-B-24 (for ASMi-52CDB)	Two RJ-11s	Two RJ-45s
E1 (G.704) (unbalanced)	LRSI-F-25 (for ASMi-52CDF) LRSI-B-25 (for ASMi-52CDB)	One DB-25	Two RJ-45s

Note

All DTE ports in the card must have the same type of interface.

Data Rate

ASMi-52CD supports multiple data rates (user-selectable) in the range between 64 kbps and 4608 kbps. Data rate depends on the following factors:

- DTE interface type of the local and remote units
- Line interface type (2-wire or 4-wire)
- Clock mode (internal or station).

Table 1-3 and *Table 1-4* detail the ASMi-52CD data rates with all possible combinations of line/DTE interface types, line types, and clock modes.

Table 1-3. ASMi-52CD 2-Wire Data Rates

DTE Interface	Clock Mode	Data Rate
IR-ETH, IR-ETH/Q, IR-ETH/QN, IR-IP	Internal	N × 64 kbps (N = 1, 2, ..., 32, 36)
IR-ETH, IR-ETH/Q, IR-ETH/QN, IR-IP	Station	N × 64 kbps (N = 1, 2, ..., 32)

Table 1-4. ASMi-52CD 4-Wire Data Rates

DTE Interface	Clock Mode	Data Rate
IR-ETH, IR-ETH/Q, IR-ETH/QN, IR-IP	Internal	N × 128 kbps (N = 1, 2, ..., 36)
IR-ETH, IR-ETH/Q, IR-ETH/QN, IR-IP	Station	N × 128 kbps (N = 1, 2, ..., 36)
V.35, RS-530, X.21	Internal	N × 128 kbps (N = 1, 2, ..., 36)
V.35, RS-530, X.21	External	N × 128 kbps (N = 1, 2, ..., 36)
V.35, RS-530, X.21	Station	N × 128 kbps (N = 1, 2, ..., 36)
E1	Internal, external, station	N × 64 kbps (N = 1, 2, ..., 32)

Timing

ASMi-52CD supports three clock modes:

- Internal, derived from its internal oscillator
- LRS-24 station clock input
- External clock (only supported by 4-wire serial interfaces).

Remote Management

ASMi-52CD allows full management of the local and remote modems using SNMP management or an ASCII terminal via the CM-2 card of the LRS-24 modem rack. Management of the remote unit is achieved via an inband channel that allows simultaneous remote configuration for both modems, real-time alerts on failures, diagnostic tests, and statistical information on system performance. The configuration parameters are stored in the card flash.

The modem uses an Embedded Operation Channel (EOC) for controlling and monitoring the remote unit. The management channel operates without interfering with data transmission.

Diagnostics

The ASMi-52CD diagnostic capabilities include the following:

- Self-test during power-up.
- SHDSL statistics collection, which can be activated from the RADview SNMP management tool.
- Local analog loopback (LLB), available for non-LAN interfaces only.
- Digital remote loopback (RLB), available for non-LAN interfaces only.

Software Download

ASMi-52CD allows downloading software versions from CM-2 to the modem card (see *Appendix B*).

Real-Time Alarms

Real-time alarms provide real time information on system status indicating management failure, loss of synchronization, etc.

ASMi-52CD also features a log file that stores all alarms and events that occurred in the unit. These alarms can be displayed and cleared.

Line Protection

ASMi-52CD incorporates high-voltage line protection in compliance with ITU K.21.

1.2 Physical Description

Figure 1-2 shows the front panel of the ASMi-52CD 2-wire module. *Figure 1-3* shows the front panel of the ASMi-52CD 4-wire module. They include LEDs that display the status of power, data flow, control signals, and diagnostics for each of the modems.

For a detailed description of the LED functions and states, see *Front Panel LEDs* in Chapter 2.

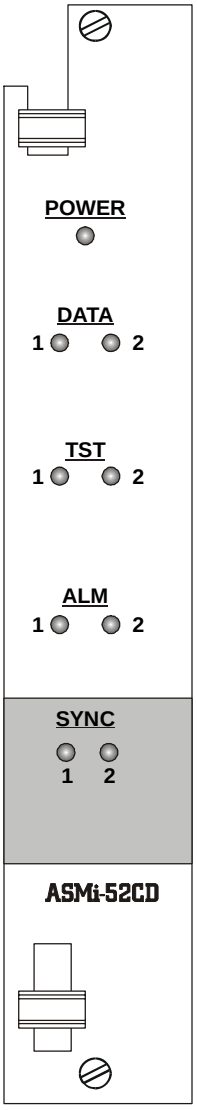


Figure 1-2. ASMi-52CD Front Panel

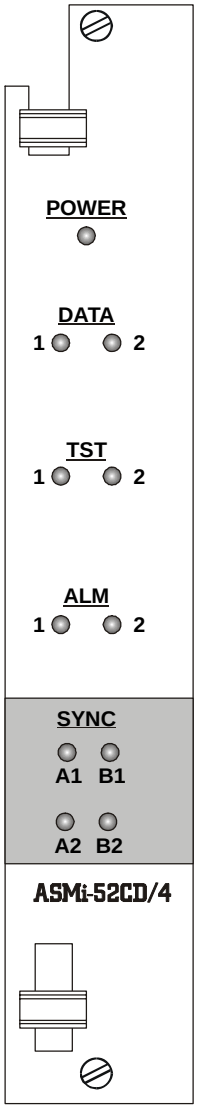


Figure 1-3. ASMi-52CD/4 Front Panel

Figure 1-4 shows the ASMi-52CD PCB with E1 DTE interface. In addition to the watchdog and ground selection jumpers, it contains two double jumpers (JP1, JP2) and an S1 DIP switch for selection of the E1 interface type.

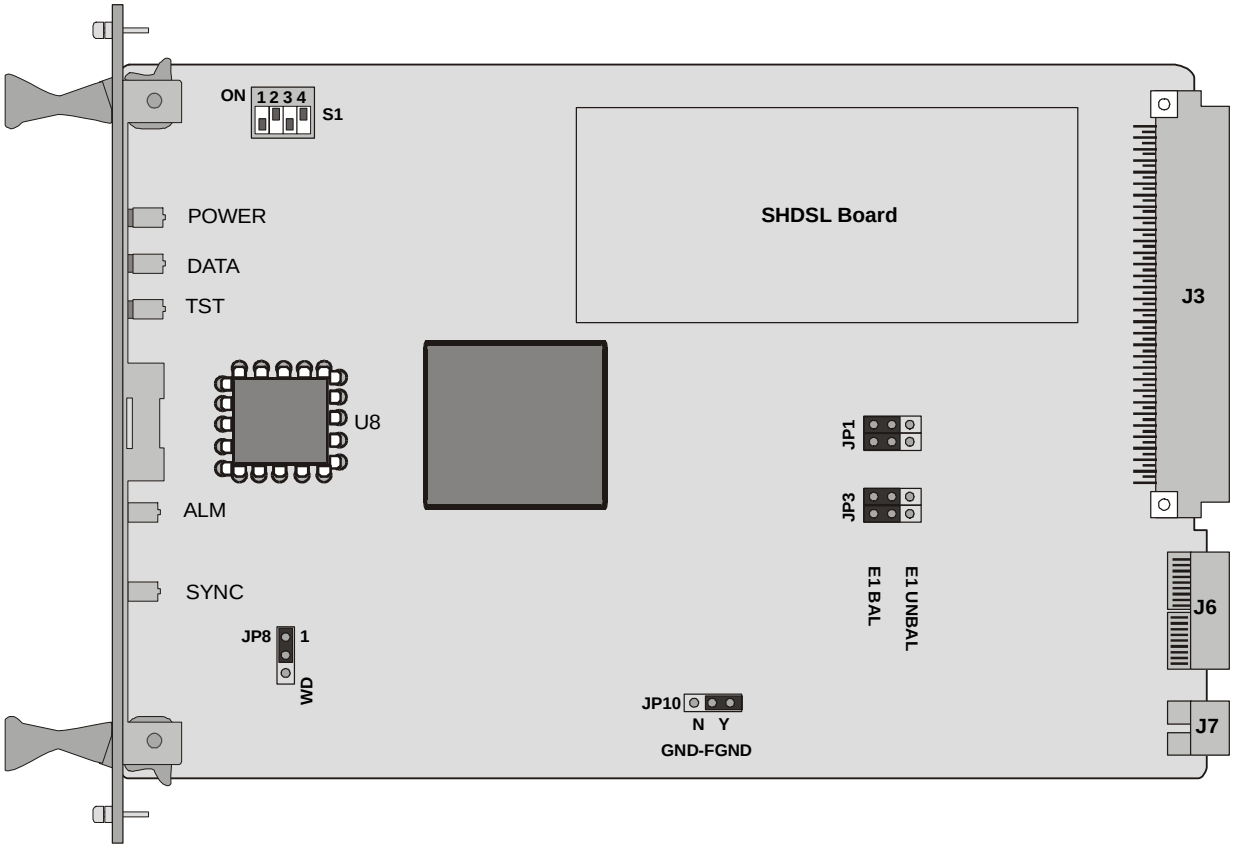


Figure 1-4. ASMi-52CD/E1 Card – Component Side

ASMi-52CD is coupled to the LRS-24 chassis backplane and to the digital interface card by three connectors (refer to *Figure 1-4)*. The backplane connectors are described in *Table 1-5.*

Table 1-5. Modem Card Connectors

Connector	No. of Pins	Function	Use
J3	96	Data	Carrying data and signaling to/from the Interface module in the LRS-24 chassis.
J6	48	Control	Carrying management information between the ASMi-52CD module and the control module (CM-2) and supplying -5V from the chassis power supply module.
J7	8	Power	Supplying +5V from the chassis power supply module.

1.3 Functional Description

Following is a functional description of ASMi-52CD (see *Figure 1-5*).

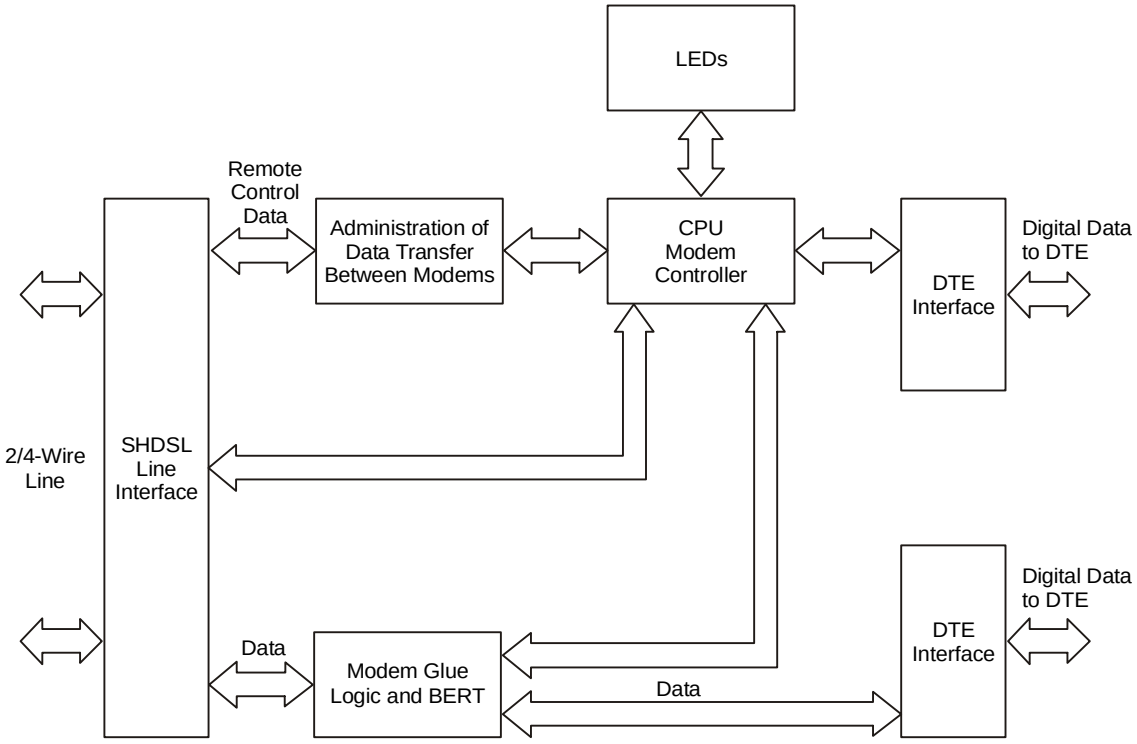


Figure 1-5. ASMi-52CD Block Diagram

The ASMi-52CD modem consists of the following major modules:

SHDSL Interface Module – This module translates the received and transmitted data from the two lines to the two DTE interfaces.

Modem Glue– This module processes the data from/to the SHDSL interface module.

Administration Data Transfer Module – This module manages the data transfer between modems on both sides of the line.

Modem Controller – This module, based on a MC68302 microprocessor, controls the ASMi-52CD operation.

LEDs Module – This module provides modem status information via LED indicators on the front panel.

Digital Interfaces – This module prepares the digital data coming from the DTE into a data stream for the modem glue logic. In addition it translates the data from the modem glue logic into digital data to be sent to the DTE.

1.4 Technical Specifications

Line Interface	*Type*	2/4-wire unconditioned dedicated line
	Line Coding	TC-PAM
	Range	See *Table 1-1*
	Impedance	135Ω
	Connector	RJ-45
	Protection	ITU K.21, UL1950
DTE Interface	*Data Rate*	See *Table 1-3* and *Table 1-4*
	Connector	• X.21: 26-pin SCSI male • V.35: 26-pin SCSI male • RS-530: 26-pin SCSI male • E1: RJ-11 balanced or DB-25 unbalanced • IR-ETH: RJ-45 • IR-ETH/Q: RJ-45 • IR-ETH/QN: RJ-45 • IR-IP: RJ-45
Timing	*ASMi-52CD*	Derived from three alternative sources: • Internal oscillator • Station clock • External clock
Diagnostics	*Self-test*	Self-test during power-up
	Loopbacks	ITU V.54: • Local analog loopback (LLB) (serial interfaces only) • Remote digital loopback (RLB) (serial interfaces only)
	Statistics Collection	• E1 with CRC-4: per ITU G.706 • E1 without CRC-4: bipolar violations (BPV) • SHDSL performance
Management	*Type*	RADview SNMP management tool, Telnet or ASCII terminal
Indicators	*POWER*	Power
	DATA	Data transmitted or received

	TST	Test mode
	ALM	Alarm occurs
	SYNC	Line synchronization
Power Supply	*Voltage*	+5V protected by 4A fuse -5V protected by 1A fuse
	Power Consumption	• ASMi-52CD/2W: 7.5W max • ASMi-52CD/4: 10W max
Environment	*Temperature*	0°–50°C (32°–122°F)
	Humidity	Up to 90%, non-condensing

Chapter 2

Installation and Setup

This chapter includes:

- General information on the ASMi-52CD installation
- Detailed description of interface modules for ASMi-52CD
- Connecting the interface
- Normal operation of the ASMi-52CD module.

Note

Before installing the product, review Handling Energized Products *at the beginning of the manual.*

2.1 Introduction

This chapter provides installation and operation instructions for the ASMi-52CD card (see *Section 2.2*) and the applicable Interface modules (see *Section 2.4)* The information presented in this chapter supplements the general instructions for installation and operation of the LRS-24F or LRS-24B chassis.

After installing the ASMi-52CD modem and interface module and powering up the chassis, the front panel LEDs should assume the states as shown in *Chapter 3*. In case of a problem, refer to *Chapter 4*. For system configuration, refer to *Chapter 3*.

Warning

The operator or the user should not perform internal settings, adjustment, maintenance, and repairs; such operations should only be performed by a skilled technician aware of the hazards involved.

Always observe standard safety precautions during the installation, operation, and maintenance of this product.

Caution

The ASMi-52CD module contains components sensitive to electrostatic discharge (ESD). To prevent ESD damage, always hold modules by the sides and do not touch the module components or connectors.

2.2 Package Contents

The ASMi-52CD package includes the following items:

- ASMi-52CD modem card
- Matching interface module
- Technical documentation CD
- Interface cable for connecting an interface module to the appropriate DTE:
  - RS-530 – CBL-SCS26/530 (if ordered)
  - V.35 – CBL-SCS26/V35 (if ordered)
  - X.21 – CBL-SCS26/X21 (if ordered)
  - Unbalanced G.704 E1 – CBL-LRSI25/DB25/UB (if ordered).

2.3 Setting the Internal Jumpers

Figure 2-1 illustrates the basic ASMi-52CD module layout.

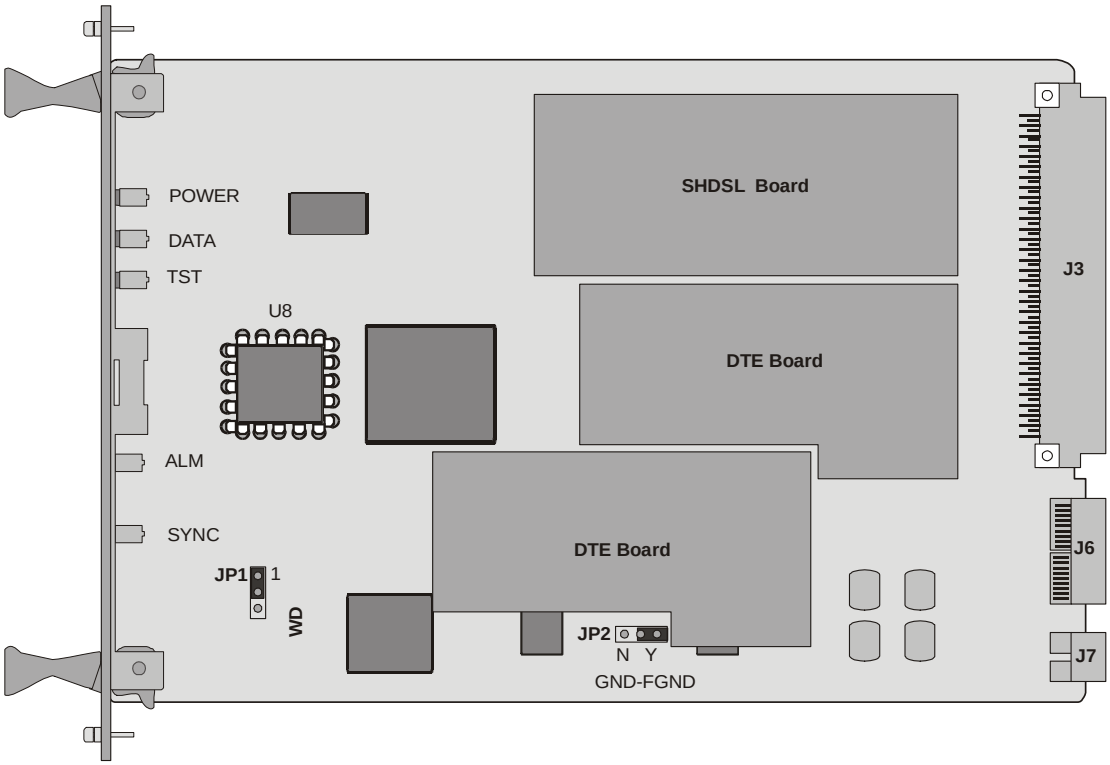


Figure 2-1. ASMi-52CD Jumpers

Check that the following jumpers have been set properly:

- The JP8 jumper cap is installed over pin 1.
- The JP10 jumper is set to **Y**.

With the exception of the ASMi-52CD/4 E1 module, all additional jumpers and switches are factory-set and must not be moved by the user.

Warning

In certain locations where permanent excessive high voltages are present on the lines, setting JP10 to NO may render the unit unsafe for connection to unprotected telecommunication networks

Setting E1 Interface Internal Jumpers

Figure 2-2 illustrates the ASMi-52CD module layout for E1 interfaces. In addition to the jumpers already described, it contains two double jumpers (JP1, JP2) and an S1 DIP switch for selection of the E1 interface type, balanced or unbalanced.

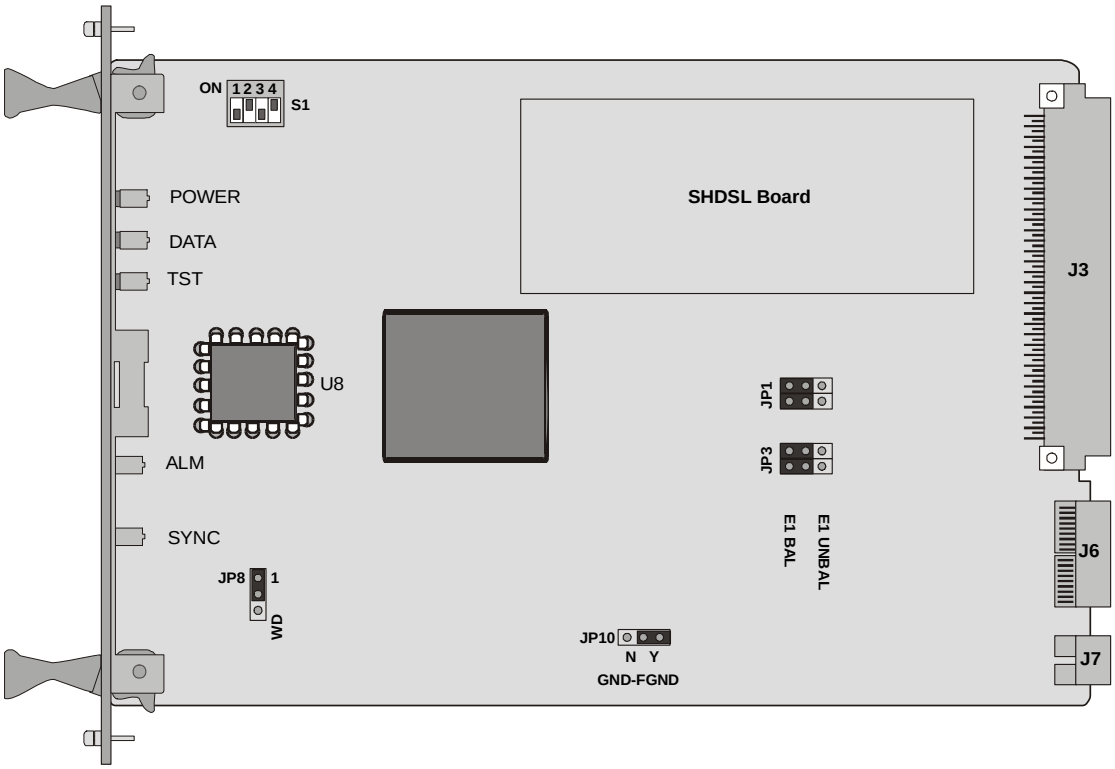


Figure 2-2. ASMi-52CD/4 E1 Jumpers

➤ **To select the E1 interface type:**

- Set the JP1 and JP3 jumpers to match the E1 interface type: balanced or unbalanced.
- Set section 1 of the S1 DIP switch on the modem card to match the E1 interface type: balanced (OFF) or unbalanced (ON).

Installing the Card in the Chassis

➤ **To install the ASMi-52CD card into the LRS-24 chassis:**

1. Refer to the system installation plan and insert the ASMi-52CD module in the assigned I/O slot of the LRS-24 enclosure.
2. Fasten the two front panel screws to secure the module to the LRS-24 frame for proper grounding.

2.4 Interface Module Installation

Interface Module Inspection

Check that the supplied interface modules meet the physical and electrical interface requirements of the installation site.

- LRSI-F-5 supports two V.35, RS 530 or X.21 ports, using the appropriate adapter cable
- LRSI-F-14 supports two IR-ETH (Ethernet bridge) or IR-ETH/Q (Ethernet bridge with VLAN support) port
- LRSI-F-23 supports two IR-IP (IP router) ports
- LRSI-F-24 supports two balanced E1 ports
- LRSI-F-25 supports two unbalanced E1 ports, using the adapter cable

The interface modules are shown in *Figure 2-3*.

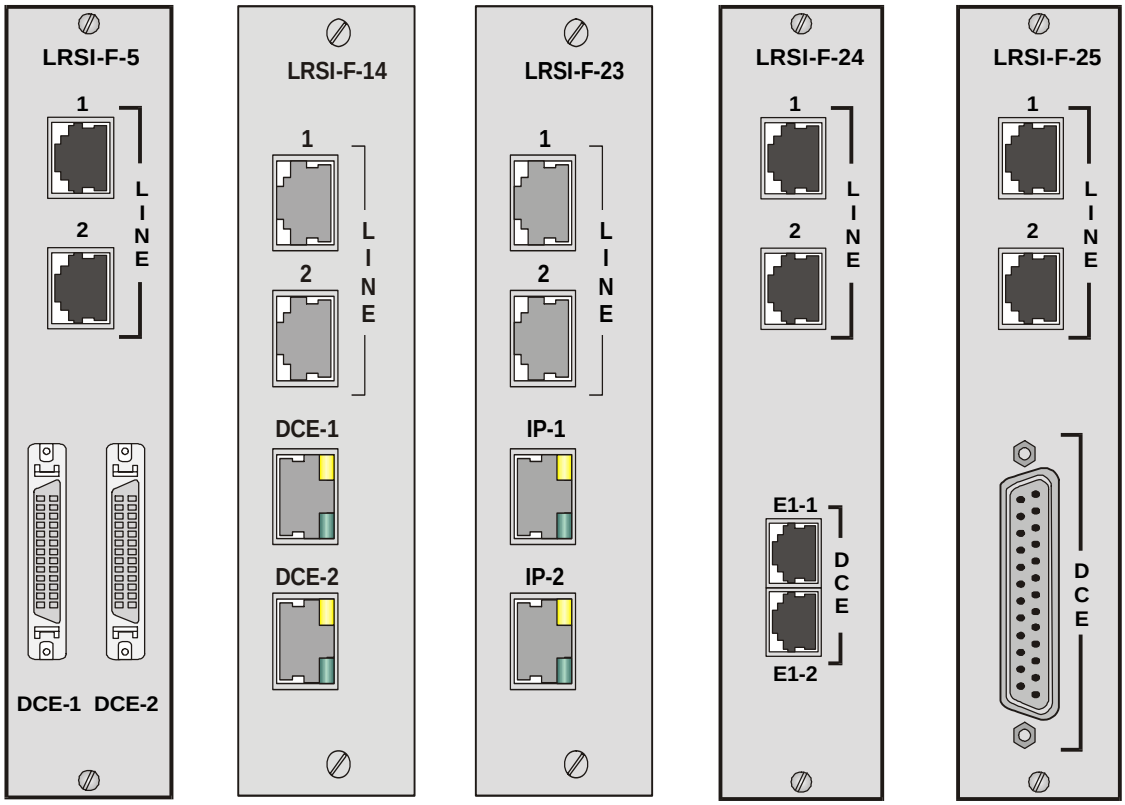
Note *LRSI-F-xx interface modules are placed in the top section of the LRS-24F chassis; LRSI-B-xx interface modules are placed in the back section of the LRS-24B chassis.*

The Ethernet interface module layout is shown in *Figure 2-4.*

The serial interface module layout is shown in *Figure 2-5*.

Refer to the following appendixes for more information on the interface modules:

- *Appendix D:* IR-ETH interface module
- *Appendix E:* IR-ETH/Q interface module
- *Appendix F*: IR-ETH/QN interface module
- *Appendix G*: IR-IP interface module.



LRSI-F-5 *LRSI-F-14* *LRSI-F-23* *LRSI-F-24* *LRSI-F-25*

Serial Interface *Ethernet Interface* *Ethernet Interface* *E1 Balanced Interface* *E1 Unbalanced Interface*

Figure 2-3. ASMi-52CD Interface Modules

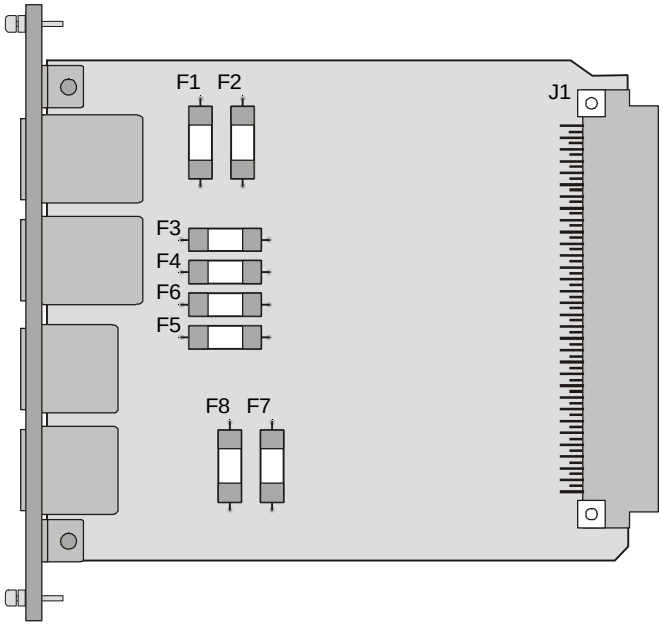


Figure 2-4. LRSI-F-14 Interface Module PCB Layout

Setting the Serial Interface Type (LRSI-F-5)

When using a serial interface (V.35, X.21, RS-530), use the LRSI-F-5 interface module, you must specify the interface type by setting the jumpers on the interface module (see *Figure 2-5*).

Note

Both DTEs must be set for the same interface.

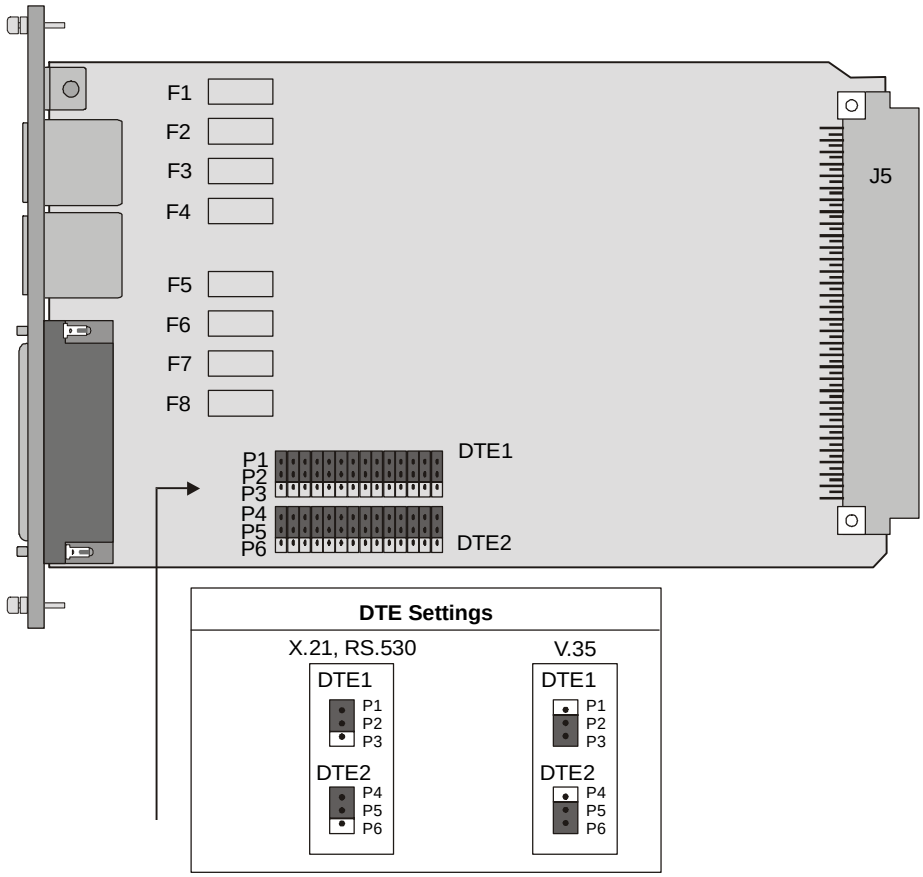


Figure 2-5. LRSI-F-5 Interface Module PCB Layout

Installing the Interface Module into the Chassis

➤ To install the interface module into the LRS-24 chassis:

1. Insert the interface module into the upper section above the ASMi-52CD module of the LRS-24F chassis, or back section of the LRS-24B chassis.
2. Fasten two front panel screws to secure the module to the LRS-24 frame for proper grounding.

2.5 Connecting the Interface Cables

ASMi-52CD is connected to the line and DTE via the interface module. Identify the necessary cables for the interface module you have installed and prepare the line and DTE cables. Refer to *Table 2-1* or *Table 2-2* to prepare the line cable. Refer to *Appendix A* for information on adapter cables and pin assignments for the DTE cables.

Connecting the Line and DTE

➤ **To connect the line and DTE cables to the interface module:**

1. Connect the line and DTE cables to the appropriate interface module connectors.
2. Use the side screws of the DTE cable connector to fasten the cable to the interface module DTE connector.

Table 2-1. Pin Assignment of Line Connector for ASMi-52CD

Pins	ID	Function	Direction
4, 5	LINE	Bidirectional line	Input/Output
1, 2, 3, 6, 7, 8	–	Not connected	–

Table 2-2. Pin Assignment of Line Connector for ASMi-52CD/4

Pins	ID	Function	Direction
1, 2, 4, 5	LINE	Bidirectional line	Input/Output
3, 6, 7, 8	–	Not connected	–

Connecting the LRSI-F-5 Interface

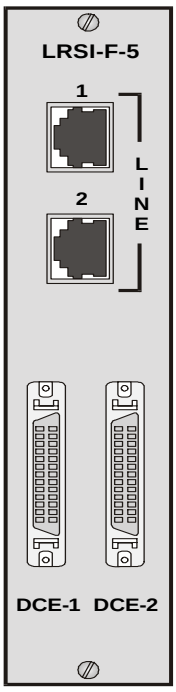


Figure 2-6. LRSI-F-5

➤ **To connect the LRSI-F-5 interface module:**

1. Connect the SHDSL cables terminated in RJ-45 connectors into the card connectors marked LINE.
2. Connect 26-pin SCSI adapter cables into the card connectors marked DCE. Depending on the interface, use the following cables available from RAD:

Table 2-3. LRSI-F-18 Interface Adapter Cables

DCE Interface Type	Cable Number	Terminating Connectors
RS-530	**CBL-SCS26/530/F**	1 female DB-25 RS-530
V.35	**CBL-SCS26/V35/F**	1 female 34-pin V.35
X.21	**CBL-SCS26/X21/F**	1 female DB-15 X.21

Connecting the LRSI-F-14 Interface

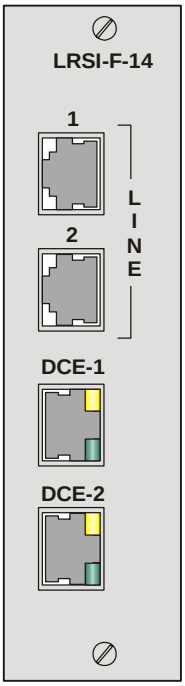


Figure 2-7. LRSI-F-14

➤ To connect the LRSI-F-14 interface module:

1. Connect the SHDSL cables terminated in RJ-45 connectors into the card connectors marked LINE.
2. Connect RJ-45 terminated Ethernet cables into the card connectors marked DCE.

Connecting the LRSI-F-23 Interface

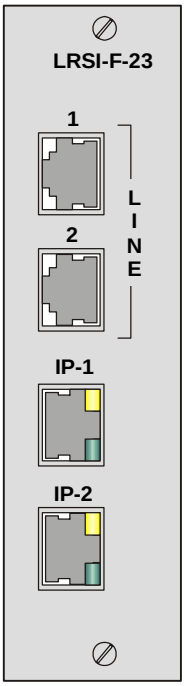


Figure 2-8. LRSI-F-23

➤ To connect the LRSI-F-23 interface module:

1. Connect the SHDSL cables terminated in RJ-45 connectors into the card connectors marked LINE.
2. Connect RJ-45 terminated cables into the card connectors marked IP.

Connecting the LRSI-F-24 Interface

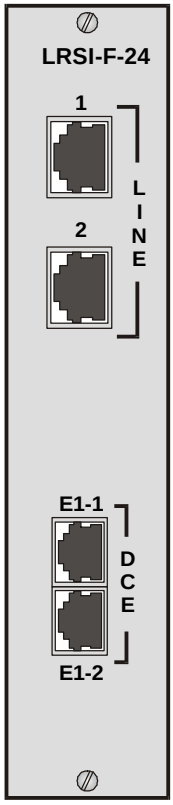


Figure 2-9. LRSI-F-24

➤ To connect the LRSI-F-24 interface module:

1. Connect the SHDSL cables terminated in RJ-45 connectors into the card connectors marked LINE.
2. Connect RJ-11 terminated balanced E1 cables into the card connectors marked E1.

Connecting the LRSI-F-25 Interface

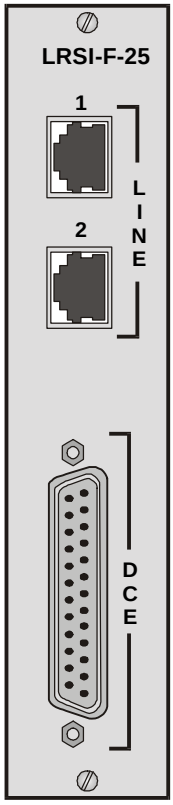


Figure 2-10. LRSI-F-25

➤ To connect the LRSI-F-25 interface module:

1. Connect the SHDSL cables terminated in RJ-45 connectors into the card connectors marked LINE.
2. Connect the unbalanced E1 cable terminated by a DB-25 connector (**CBL-LRSI25/DB25/UB/M**) into the card connector marked DCE.

Chapter 3

Operation

This chapter describes how to configure the ASMi-52CD modem installed in the LRS-24 hub using an ASCII terminal. It includes sections on:

- Initiating an ASCII terminal session
- Selecting command options
- Configuring the modem.

3.1 Turning On

➤ **To turn on ASMi-52CD:**

1. Turn on the LRS-24 chassis and the modem on the far end of the line.
2. After power-up, all LEDs turn on for 3 seconds while the CPU initiates the ASMi-52CD module.
3. After synchronization between the two modems has been achieved, the ASMi-52CD module assumes the normal state according to the LED indications in *Table 3-3*.
4. For other LED indications, see *Table 3-1*.
5. For troubleshooting, see *Using LEDs* in Chapter 4.

3.2 Controls and Indicators

ASMi-52CD 2-Wire

Figure 3-1 shows the front panel of the ASMi-52CD 2-wire module. *Table 3-1* lists the functions of the ASMi-52CD front panel indicators.

Table 3-1. ASMi-52CD Front Panel LEDs

ID	Color	Indication
POWER	Green	ON – Power is ON
DATA	Yellow	Blinks – Data is transmitted or received OFF – No data is transmitted or received
TST	Red	ON – Test mode is active in local or remote unit Blinks – Software download is in progress
ALM	Red	ON – Alarm occurs
SYNC	Green/ Red	ON (green) – Synchronization has been achieved between the two modems Blinks (green/red) – During synchronization process ON (red) – Loss of synchronization has occurred between the two modems

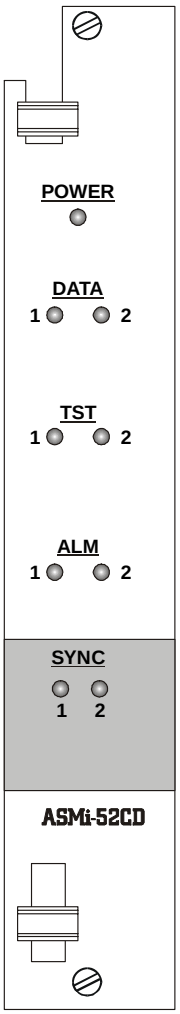


Figure 3-1. ASMi-52CD LEDs

ASMi-52CD 4-Wire

Figure 3-2 shows the front panel of the ASMi-52CD 4-wire module. *Table 3-2* lists the functions of the front panel indicators.

Table 3-2. ASMi-52CD/4 Front Panel LEDs

ID	Color	Indication
POWER	Green	ON – Power is ON
DATA	Yellow	Blinks – Data is transmitted or received OFF – No data is transmitted or received
TST	Red	ON – Test mode is active in local or remote unit Blinks – Software download is in progress
ALM	Red	ON – Alarm occurs
SYNC	Green/ Red	ON (green) – Synchronization has been achieved between the two modems Blinks (green/red) – During synchronization process ON (red) – Loss of synchronization has occurred between the two modems

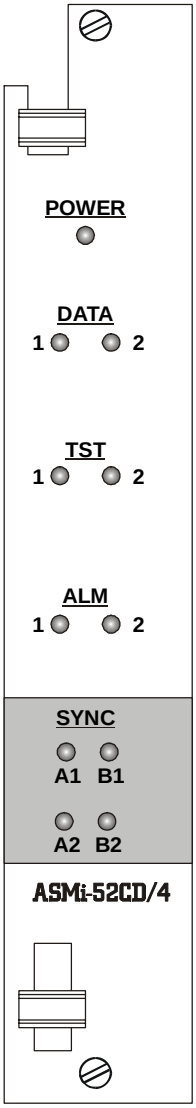


Figure 3-2. ASMi-52CD/4 LEDs

Normal Indications

After power-up the LEDs should assume the states as shown in *Table 3-3*.

Table 3-3. Normal State of LEDs

ID	Color	State
POWER	Green	ON
DATA	Yellow	Blinking
TST	Red	OFF
ALM	Red	OFF
SYNC	Green/Red	ON (green)

3.3 Turning Off

➤ To turn off ASMi-52CD:

- Turn off the LRS-24 chassis.

Chapter 4

Configuration

This chapter describes how to configure the ASMi-52CD modem installed in the LRS-24 hub using an ASCII terminal. It includes sections on:

- Initiating an ASCII terminal session
- Selecting command options
- Configuring the modem.

4.1 Configuring for Management

The terminal is used to configure, monitor and perform diagnostic tests of the LRS-24 chassis and modems installed in it. Specific screens are used for each of these management operations.

The ASCII terminal operations for the LRS-24 hub are described in the LRS-24 installation and operation manual. That manual provides instructions for:

- Accessing various terminal screens
- Selecting control parameter options
- LRS-24 management operations

The LRS-24 management screens available through the ASCII terminal handle the hub functions for:

- IP management network
- LRS-24 chassis status

The LRS-24 hub screens also provide information on modems installed in the chassis and their alarm status (see *Table 4-1*).

Note

For SNMP RADview operation, refer to RADview Operation Manual.

Table 4-1. LRS-24 Screens

Screen	Indication
LRS-24 Cards	Slot number in chassis where a modem is installed and type of SNMP management associated with the module, via either on-board agent (SMOD) or CM-2 agent (IMOD). ASMi-52CD is IMOD type modem.
Hub Alarm	Activity status of alarms for modems installed in chassis. To view the active alarm associated with a specific modem, enter the Modem Alarms Status screen. For details regarding the ASMi-52CD alarms, refer to in Chapter 4.
Hub Log File	Time and date of changes in chassis status, such as modem removal from or insertion to chassis.

4.2 Initiating an ASCII Terminal Session

➤ **To enable an ASCII terminal session:**

1. Connect the terminal to the CM-2 RS-232 front connector of the LRS-24 chassis.
2. Power up the hub.

   The LRS-24 Main menu appears (see *Figure 4-1*). You are prompted for a password.
3. If a password has been assigned, type the password and press **<Enter>**.
   If no password has been assigned (default), press **<Enter>**.

   The **CM2>** prompt appears.

➤ **To select an option in the Main menu:**

1. Type the number corresponding to the option and press **<Enter>**.

   The following message appears:

   Please enter the slot number (1-12)
2. Type the slot number of the ASMi-52CD card and press **<Enter>**.

   The screen for the selected command option appears.

```
            L         R R     S S S         2 2    4     4
            L        R   R   S             2   2   4     4
            L        R  R     S S    ===     2    4 4 4 4
            L        R   R        S         2            4
            L L L L  R    R  S S S         2 2 2        4

            R A D     DATA   COMMUNICATIONS     L . T . D


Please choose command ID:
1.  System Configuration                12. Modem/Hub Auto Configuration
2.  System Status                       13. Modem Operation
3.  System manager list                 14. Modem Status
4.  System card type define             15. Modem Diagnostics
5.  System Alarms                       16. Modem Alarms
6.  System Log-file                     17. Modem Log-file
7.  System control port                 18. Modem download
8.  System Download                     19. Modem Parameters
9.  System management access            20. Modems SW version
10. System Dial out modem               21. Help
11. System Reset
CM2 >
```

Figure 4-1. LRS-24 Terminal Session Opening Screen

4.3 Navigating the ASMi-52CD Menus

The ASMi-52CD menus can be navigated using the keystrokes described in *Table 4-2.*

Table 4-2. Keys to Navigate Menus

Key	Function
<Tab>	Moving from field to field. Pressing **<Tab>** in the last field brings the cursor back to the first field on the screen.
<F> or **<U>**	Viewing the next parameter value in the list
<B> or **<D>**	Viewing the previous parameter value in the list
<Enter>	Saving parameter values and exiting the screen
<Esc>	Exiting the screen without saving parameter values

The table below describes the menus and screens used to perform common configuration functions.

Table 4-3. Main Menu Items and Configuration Screen Names

LRS-24 Main Menu Item	Screen Name	Function
Modem Operation	Modem Advanced	Setting operational parameters. This screen is needed

	Setup	to switch control or to load configurable parameters from one modem to the other
Modem Parameters	Modem Setup	Configuring parameters of both modems
Modem Status	Modem Status	Viewing types of both digital and line interfaces and LED indications, also the modem's current software and hardware version.
Modem Log-file	Modem Log File	Viewing a list of timed events for the local and remote modems
Modem Diagnostic	Modem Diagnostic	Invoking loopback connections, and LEDs test
Modem Alarm	Modem Alarm Status	Viewing modem alarm messages and states

4.4 Configuring the Modem

The initial configuration of the ASMi-52CD modem includes the following steps:

1. Accessing the Modem Setup menu.
2. Configuring the clock source.
3. Configuring the DTE interface:
   - Serial interface: Configure the data rate
   - E1 interface: Go to the Modem Setup menu: E1 Parameters menu and configure the E1 parameters
4. Configuring the line parameters: Go to the Modem Setup Menu: Line Parameters screen and configure the line parameters

The instructions given below cover only the initial configuration procedure. Refer to *Appendix C* for the detailed descriptions of ASMi-52CD commands.

➤ **To access the Modem Setup menu:**

1. In the Main menu, select **Modem Parameters**.

   The following message appears:

   Please enter the slot number (1-12)

2. Type the slot number of the ASMi-52CD card and press **<Enter>**.

   The Modem Setup menu appears.

Configuring the Clock Source

➤ **To configure the clock source:**

- In the Modem Setup menu, move the cursor to **CLOCK SOURCE LOC/REM** field by pressing **<Tab>** and select the clock source for the selected modem.

Configuring the DTE Interface

To configure the ASMi-52CD DTE interface (serial or E1), refer to the appropriate section below.

Configuring the Serial Interface

➤ **To configure the serial interface:**

- In the Modem Setup menu, move the cursor to **DATA RATE** field by pressing **<Tab>** and select the desired transmission rate by pressing **<f>** or **<b>**.

Configuring the E1 Interface

➤ **To configure the E1 parameters:**

1. In the Modem Setup menu, move the cursor to **NEXT PARMETERS (E1)** field by pressing **<Tab>** and select **YES** by pressing **<f>** or **<b>**.

   The Modem Setup menu: E1 Parameters screen appears.

2. Configure the following E1 parameters:
   - Framing mode
   - Sync (sync loss recovery time)
   - CRC4 error checking
   - Idle code
   - E1 timeslots: Assign each E1 timeslot to carry data or idle code.

Note

- *Timeslot 0 may be looped or transparent.*
- *When operating with G732S framing, timeslot 0 is always transparent and timeslot 16 is always connected.*
- *When operating opposite ASMi-52CD with V.35 interface, assign at least six timeslots, including timeslot 0 to carry data.*

Configuring the Line Parameters

➤ **To configure the Line parameters:**

1. If you have configured E1 parameters, press **<ESC>** to return to the Main menu, and then repeat the steps above to access the Modem Setup menu.
2. In the Modem Setup menu, move the cursor to **NEXT PARMETERS (LINE)** field by pressing **<Tab>** and select **YES** by pressing **<f>** or **<b>**.

   The Modem Setup menu: Line Parameters screen appears.

3. Configure the following line parameters:
   - Power backoff
   - Snext margin, if line probing is set to adaptive
   - Current margin, if line probing is set to adaptive

- Power spectral density (when line probing set to fixed only)
- Line probing
- Transmission mode
- Loop attenuation threshold
- SNR margin threshold.

Chapter 5

Troubleshooting and Diagnostics

This chapter describes the ASMi-52CD diagnostic functions, which include:

- Diagnostic tests:
  - Loopback tests for ASMi-52CD/4 with synchronous and E1 interfaces
  - LED test
- Status indications and alarms
- SHDSL performance diagnostics
- Troubleshooting procedures.

5.1 Introduction

ASMi-52CD offers diagnostics for troubleshooting:

- Loopback – Tests the performance of the local modem and either the remote modem or the local DTE, and the lines connecting them. (Serial interfaces only.)
- Alarm buffer – Contains alarm messages regarding the status of the transmission system
- SHDSL statistics collection

All diagnostics options can be performed using RADview SNMP management tool or an ASCII terminal. Then, examine the alarm buffer messages for any transmission error or configuration mismatch. When you set a test for one modem of ASMi-52CD, no parameters for this modem can be changed except to disable the specific test. Once the line is disconnected, or one of the units is reset, the diagnostics stop.

Note

For ASMi-52CD/4 with E1 interface in all diagnostics functions the clock mode remains unchanged in order to avoid interfering with the other channels.

5.2 Configuration for Diagnostic Tests

The ASMi-52CD supports both local analog and remote digital loopbacks as per ITU V.54 for V.35 and RS-530 interfaces only. The loopback is performed via the standard pins of the synchronous interface.

➤ **To enable loopback tests:**

1. From the Main menu, select **Modem Diagnostics**.
2. Select the ASMi-52CD slot.

   The Modem Diagnostics menu shown in *Figure 5-1* appears.
3. Move the cursor to **LOCAL LOOPBACK** and/or **REMOTE LOOPBACK** field by pressing **<Tab>** and select **ENABLE** by typing **<f>** or **<b>**, and pressing **<Tab>** again.

```
MODEM DIAGNOSTICS
                      MODEM NAME:ASMi-52CD
DEFINE MODEM PORT NUMBER    : 1
MODEM STATUS                : MASTER PERMANENT
SELECT MODEM                : MODEM 1 LOCAL
LOOP & BERT                 : ANA          LOOP TIMEOUT(MIN)         : N/A
REMOTE DIG ENABLE           : N/A          LOOP TIMEOUT(0-4095 MIN) : 5 MIN
BERT RESULTS                : N/A
LED TEST                    : OFF
LOCAL LOOPBACK              : ENABLE
REMOTE LOOPBACK             : ENABLE
REMOTE DIG                  : N/A
ENABLE TEST FROM REM MODEM  : N/A
BERT ERR INJECTION          : NO ERR
```

Figure 5-1. Modem Diagnostic Screen

Bolded rows in *Figure 5-1* indicate parameters applicable to ASMi-52CD. Non-bolded parameters listed on the screen are applicable to other modems installed in the LRS-24 hub.

The Modem Diagnostics screen fields and the options for each field are explained in *Table 5-1.*

Table 5-1. Modem Diagnostics Parameters

Parameter	Type	Use	Value	Indication
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified	ASMi-52CD	Master ASMi-52CD
			ASMi-52	Standalone ASMi-52 remote modem
MODEM STATUS	Read	Viewing configuration mode	MASTER PERMANENT	Modem controls its own configurable parameters
SELECT MODEM	Write	Selecting the modem, whose diagnostic parameters you set using this screen	MODEM1 LOCAL MODEM2 LOCAL	Operational parameters will be set for one of the modem installed in the LRS-24 chassis
			MODEM1 REMOTE MODEM2 REMOTE	Operational parameters will be set for one of the remote modems
LOOP & BERT	Write	Selecting the loopback type. (V35, RS-530, X.21 and E1 interfaces only)	ANA	Run local loopback
			REM	Run remote loopback
			CANCEL	Cancel the loopback.
LOOP TIMEOUT	Write	Setting the loopback timeout period	0-4095	The loopback will automatically deactivate after the specified period of time
LED TEST	Write	Testing LEDs	ON OFF	All LEDs turn on for 3 sec.
LOCAL LOOPBACK	Write	Controlling the local loopback activation from the DTE	ENABLE	Enables analog loopback activation from the DTE via the following pins: RS-530: pin 18 V.35: pin JJ
			DISABLE	Disables analog loopback activation
REMOTE LOOPBACK	Write	Controlling the remote loopback activation from the DTE	ENABLE	Enables remote loopback activation from the DTE via the following pins: RS-530: pin 21 V.35: pin HH
			DISABLE	Disables analog loopback activation

When setting a loopback connection, from the terminal, both the SELECT MODEM and LOOP & BERT fields determine the transmission path. For example, a remote loopback (REM) from the remote (ASMi-52 standalone) modem sets a digital loopback in the local modem.

Running Loopback Tests

The purpose of a loopback test is to determine the source of a break in the data flow.

Note

Only one loopback can be activated at a time, either local or remote.

When a test is active, no other test can be activated for the current modem.

Running the Local Analog Loopback

The local analog loopback (LLB) checks the performance of the local ASMi-52CD modem, the local DTE and connection between them (see *Figure 5-2*).

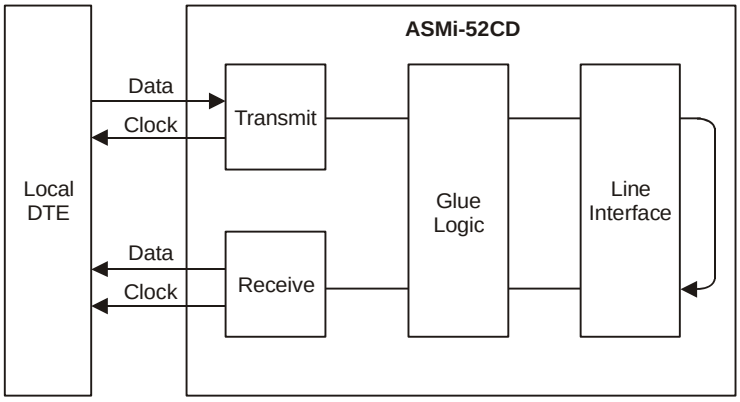


Figure 5-2. Local Analog Loopback

Before running the local analog loopback on ASMi-52CD units perform the following steps:

- ASMi-52CD with serial DTE interface
  - Configure testing equipment (for example, RAD's HBT) to internal clock and 2048 kbps baud rate.
- ASMi-52CD with E1 DTE interface
  - When operating in the framed mode, configure the E1 testing equipment to internal clock, G732N framing and assign 31 timeslots to carry data, timeslot 0 – transparent.
  - When operating in the unframed mode, configure the E1 testing equipment to the unframed mode.

➤ **To run the local analog loopback test:**

- In the Modem Diagnostics screen, move the cursor to **LOOP & BERT** field by pressing **<Tab>** and select **ANA** by typing **<f>** or **<b>**, and pressing **<Tab>** again.

Running the Remote Digital Loopback

The remote digital loopback (RLB) checks the performance of both the local and remote ASMi-52CD modems, and the lines connecting them (see *Figure 5-3*).

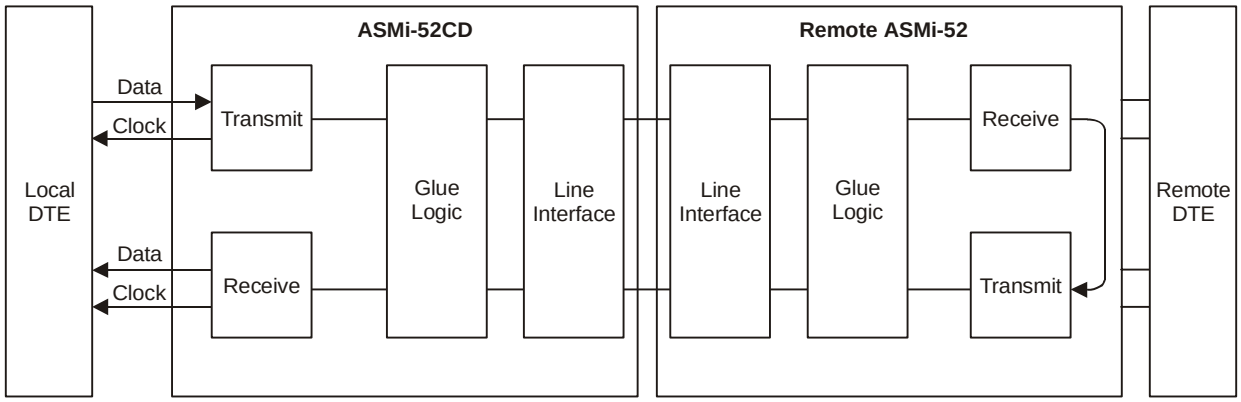


Figure 5-3. Remote Digital Loopback

➤ **To run the remote digital loopback test:**

- In the Modem Diagnostics screen, move the cursor to **LOOP & BERT** field by pressing **<Tab>** and select **REM** by typing **<f>** or **<b>**, and pressing **<Tab>** again.

Running the LEDs Test

The user can perform the LED test to verify that the local unit indicators are functioning properly.

➤ **To run the LEDs test:**

- In the Modem Diagnostics screen, move the cursor to **LED TEST** field by pressing **<Tab>** and select **ON** by typing **<f>** or **<b>**, and pressing **<Tab>** again.

5.3 Alarms

ASMi-52CD alarm buffer stores system alarm records, which can be viewed on either an ASCII terminal (see below) or an SNMP management tool. When one or more alarm records appear in the buffer, the front panel ALM LED lights up. After the alarm is cleared, the ALM LED turns off.

ASMi-52CD supports three alarm types:

- System alarms
- SHDSL alarms
- E1 alarms.

Each alarm type is displayed on a separate screen.

Viewing Alarm Messages from an ASCII Terminal

The MODEM ALARM STATUS screen (*Figure 5-4*) enables viewing messages stored in the alarm buffer of ASMi-52CD and remote modems. The screen also shows synchronization loss and DTE loopback signaling states.

➤ To view the ASMi-52CD alarms:

1. From the Main menu, select **Alarm Status**.
2. Select the ASMi-52CD slot and define the modem which alarms you intend to view.

   The MODEM ALARM STATUS screen shown in *Figure 5-4* appears. This screen displays the general alarms of ASMi-52CD.
3. To view E1 alarms, change **Next Alarm (E1)** value to **ON** and press **<Tab>** to display next alarm screen (available only for ASMi-52CD/4 with E1 interface).

   The screen shown in *Figure 5-5* appears.
4. To view SHDSL line alarms, change **Next Alarm (LINE)** value to **ON** and press **<Tab>.**

   The screen shown in *Figure 5-6* appears.

```
MODEM ALARM STATUS
                      MODEM NAME : ASMi-52CD
DEFINE MODEM PORT NUMBER      : 1
SELECT MODEM                  : MODEM 1 LOCAL
LINE DISCONNECT               : OFF
REMOTE MODEM POWER OFF        : OFF      STUFFING OVERFLOW EXC     : OFF
TRANSMIT CARRIER              : OFF      NVRAM FAILED              : OFF
RECEIVE CARRIER               : OFF      PROP PROTOCOL FAILED
LLB BY DTE                    : OFF      SOFTWARE DWL IN PROCESS   : OFF
RLB BY DTE                    : OFF      INCOMPATIBLE CONNECTORS   : OFF
SYNC LOSS    A                : ON       SYNC LOSS    B            : ON
CRC6 ERR EXC A                : OFF      CRC6 ERR EXC B            : OFF
CONFIGURATION MISMATCH        : OFF      PHASOR OVERFLOW EXC       : OFF
ILLEGAL EXTERNAL CLOCK SOURCE : OFF      WRONG CONNECTION          : OFF
NO MANAGEMENT LINK            : OFF      XILINK FAILED             : OFF
NO MODEM PORT (IR)            : OFF      LAN NOT CONNECTED         : OFF
NO FIBER INTERFACE            : OFF      NO EXT CLK INPUT          : OFF
IR RATE MISMATCH              : OFF      ILL. CLK-ERR              : OFF
SELF TEST FAILED              : OFF      OLD REM VERSION           : OFF
MINOR ALARM-AIS-ELEC          : OFF      AIS-OPT                   : OFF
MAJOR ALARM-LINE DISCON.-ELEC : OFF      LINE DISCON. – OPT        : OFF
NEXT ALARMS(E1)               : NO       NEXT ALARMS(SHDSL)        : NO
```

Figure 5-4. Modem Alarms Status Screen

```
          MODEM NAME: ASMI-52CD
DEFINE MODEM PORT NUMBER: 1
SELECT MODEM            : MODEM 1 LOCAL
E1 SIGNAL LOSS          : ON            . E1 BPV ERR. EXC        : OFF
E1 FRAME SLIP EXC       : OFF           . E1 EXCECIVE BPV        : OFF
E1 CRC4 ERR. EXC        : OFF           . E1 EXCECIVE ERROR.RATIO: OFF
E1 AIS OCCURRED         : OFF           . E1 AIS RED ALARM       : OFF
E1 RED ALARM            : ON            . E1 CRC MF ERROR.EXEC   : OFF
E1 YELLOW ALARM         : OFF           . E1 SYNC LOSS           : OFF
E1 LOCAL MF             : OFF           . E1 REMOTE MF           : OFF
E1 REM SIGNAL LOSS      : OFF           . E1 TS RATE MISMATCH    : OFF
E1 TS NOT COMP          : OFF           . E1 TS NOT * 128        : OFF
```

Figure 5-5. Modem Alarms Status Screen: E1 Alarms

```
          MODEM NAME: ASMI-52CD
DEFINE MODEM PORT NUMBER: 1
SELECT MODEM            : MODEM 1 LOCAL
LOOP ATTN  A            : OFF            . LOOP ATTN  B    : OFF
SNR MARGIN A            : OFF            . SNR MARGIN B    : OFF
LOSW FAIL  A            : OFF            . LOSW FAIL  B    : OFF
INCOMPATIBLE DATA RATE  : OFF            . INCOMPATIBLE PSD: OFF
WIRE NOT COMPATIBLE     : OFF
```

Figure 5-6. Modem Alarms Status Screen: SHDSL Alarms

Bolded rows in *Figure 5-4* indicate parameters applicable to ASMi-52CD. Non-bolded parameters listed on the screen are applicable to other modems installed in the LRS-24 hub.

Table 5-2 lists the ASMi-52CD alarms in the alphabetical order. *Table 5-7* explains how to use alarms for troubleshooting.

Table 5-2. ASMi-52CD Alarms

Alarm	Type	Description
CRC6 ERR EXC A	System	Five CRC-6 errors have been detected in the input signal of line A.
CRC6 ERR EXC B	System	Five CRC-6 errors have been detected in the input signal of line B.
E1 AIS OCCURED	E1	AIS is detected at the E1 port
E1 AIS RED ALARM	E1	AIS and loss of frame alignment are detected at the E1 port
E1 BPV ERR EXC	E1	E1 bipolar violation errors exceed threshold
E1 CRC MF ERR EXC	E1	CRC errors detected in the frame synchronization signal exceeded the threshold
E1 CRC-4 ERR. EXC	E1	CRC-4 errors exceed the threshold
E1 EXCECIVE BPV	E1	Bipolar violations rate exceeds 1×10^{-6} during the last 1000 seconds
E1 EXCECIVE ERR RATIO	E1	The bit error rate of the link exceeds 10^{-3}

Alarm	Type	Description
E1 FRAME SLIP EXC	E1	E1 frame slips exceed the threshold
E1 LOCAL MF	E1	Local loss of frame synchronization
E1 RED ALARM	E1	Red alarm is detected at the E1 port
E1 REM SIGNAL LOSS	E1	E1 loss is detected at the remote E1 port
E1 REMOTE MF	E1	Remote loss of frame synchronization
E1 SIGNAL LOSS	E1	E1 loss is detected at the DTE port
E1 SYNC LOSS	E1	E1 loss of frame synchronization occurred
E1 TS NOT COMP	E1	Number of timeslots assigned for the local unit does not match the number of timeslots assigned for the remote unit.
E1 TS NOT X128	E1	Number of timeslots assigned for a ASMi-52CD/4 is not n×128
E1 TS RATE MISMATCH	E1	Current line rate does not support the number of assigned E1 timeslots
E1 YELLOW ALARM	E1	Yellow alarm is detected at the E1 port
ILLEGAL EXTERNAL CLOCK SOURCE	System	A remote standalone ASMi-52 is set to the Auto External timing mode and the clock source failed.
INCOMPATIBLE CONNECTORS	System	Connectors are incompatible.
INCOMPATIBLE DATA RATE	SHDSL	Mismatch in the line rate and data rate. Applicable for V.35 interfaces operating in adaptive rate mode
INCOMPATIBLE PSD	SHDSL	Mismatch between PSD mode selected by the user and PSD mode used by the line
IR RATE MISMATCH	System	Port interface configuration mismatch.
LAN NOT CONNECTED	System	The Ethernet interface module of the remote modem is not connected to the LAN
LLB BY DTE	System	Local loopback signaling status from the DTE of the remote standalone ASMi-52.
LOOP ATTN. OVER LINE A	SHDSL	Line A loop attenuation has exceeded the alarm threshold
LOOP ATTN. OVER LINE B	SHDSL	Line B loop attenuation has exceeded the alarm threshold (4-wire units only)
LOSW FAILURE OVER LINE A	SHDSL	Loss of Sync Word is detected on line A
LOSW FAILURE OVER LINE B	SHDSL	Loss of Sync Word is detected on line B (4-wire units only)

Alarm	Type	Description
NO MANAGEMENT LINK	System	Failure of the inband management via the EOC.
NO MODEM PORT (IR)	System	No digital interface card is installed on the local or remote modem, or the installed module is not applicable.
PHASOR OVERFLOW EXC	System	A problem of receive and transmit clock between data channel and modem PCM clock.
RLB BY DTE	System	Remote loopback signaling status from the DTE of the remote standalone ASMi-52.
SELF TEST FAILED	System	Modem self-test failure was detected.
SNR MARGIN OVER LINE A	SHDSL	Line A sound-to-noise margin has exceeded the alarm threshold
SNR MARGIN OVER LINE B	SHDSL	Line B sound-to-noise margin has exceeded the alarm threshold (4-wire units only)
SOFTWARE DWL IN PROCESS	System	Software dowload is in progress
STUFFING OVERFLOW EXC	System	The data line recovery circuits cannot recover the data line clock.
SYNC LOSS A	System	Synchronization between modems is lost for line A.
SYNC LOSS B	System	Synchronization between modems is lost for line B.
WIRE NOT COMPATIBLE	SHDSL	Mismatch of line interface types (2/4-wire) between local and remote units

5.4 Displaying SHDSL Performance Diagnostics

ASMi-52CD has capabilities for collection of SHDSL parameters performance diagnostics. The statistics are accessed via the RADview SNMP management parameters tool. The parameters are listed in *Table 5-3*, *Table 5-4* and *Table 5-5*.

Table 5-3. ASMi-52CD Performance Monitoring Parameters for Current Time

Display	Description
Current ES	This parameter provides the number of parameters Errored Seconds in which one or more CRC (Cyclic Redundancy Check) error events occurred during the current interval. This value is updated every second.
Current UAS	This parameter provides the number of Unavailable Seconds in which a failed signal occurred during the current interval. This value is updated every second.
Current SES	This parameter provides the number of Severely Errored Seconds in which 832 or more CRC error events occurred during the current interval. This value is updated every second.
Current BBE	This parameter provides the number of the Errored Block that had not occurred during the severely errored seconds during the current interval. This value is updated every second.

Display	Description
Current TIMER	Time in seconds from the beginning of the interval. This value is updated every second.
24 hour ES	Number of ES measured during the last 24 hours.
24 hour UAS	Number of UAS measured during the last 24 hours.
24 hour SES	Number of SES measured during the last 24 hours.
24 hour BBE	Number of BBE measured during the current 24 hours.
24 Intervals	Number of 15 minute intervals the device has been working since power up, the value is from 0 to 96 (or up to 24 hours).

Table 5-4. ASMi-51CD Performance Monitoring for Interval

Display	Description
ES	Number of errored seconds during the interval
UAS	Number of unavailable seconds during the interval
SES	Number of severely errored seconds during the interval
BBE	Number of the errored block during the interval
ESR	Ratio (in %) of the errored seconds to the total seconds in the interval
SESR	Ratio (in %) of the severely errored seconds to the total seconds in the interval
BBER	Ratio (in %) of the background block error seconds to the total seconds in the interval

Table 5-5. ASMi-52CD Performance Monitoring Parameters for E1 Interface

Display	Type	Description
CRC errors	CRC-4 Enabled (Current Performance only)	Number of CRC error events recorded since the last time the register was cleared
CRC avrg errors	CRC-4 Enabled (Current Performance only)	The average number of CRC events per second. Updated every second.
Current ES	CRC-4 Enabled	Number of errored seconds in which one or more CRC (Cyclic Redundancy Check) error events occurred during the current interval. Updated every second for 15-minute interval or every 15 minute for 24-hour interval.
Current SES	CRC-4 Enabled	Number of severely errored seconds in which 832 or more CRC error events occurred during the current interval. Updated every second for 15-minute interval or every 15 min. for 24-hour interval

Display	Type	Description
Current UAS	CRC-4 Enabled	Number of unavailable seconds in which a failed signal occurred during the current interval. Updated every second for 15-minute interval or every 15 min. for 24-hour interval.
Current BES	CRC-4 Enabled	Number bursty errored seconds, in which 2 to 831 CRC error events occurred during the current interval. Updated every second.
Current LOFC	CRC-4 Enabled	Number of loss of frame alignment events measured during the current interval. Updated every second for 15-minute interval or every 15 min. for 24-hour interval.
Current CSS	CRC-4 Enabled	Number of seconds with one or more controlled slip events measured during the current interval. Updated every second for 15-minute interval or every 15 min. for 24-hour interval.
24 hour degrade minute	CRC-4 Enabled (Current Day only)	Total number of degraded minutes in the current 24-hour interval. A degraded minute is a minute in which the BER exceeded 1×10^{-6}. Updated every minute.
24 hour last degrade minute	CRC-4 Enabled (Current Day only)	Total number of degraded minutes in the last 24-hour interval. Updated every 24 hours.
Current DM	CRC-4 Enabled	Number of degraded minutes in which the BER exceeded 1×10^{-6}. Updated every minute for 15-minute interval or every 24 hours. for 24-hour interval.
BPV last minute	CRC-4 Disabled	Number of bipolar violation events detected in the last minute. Updated every minute.
BPV max minute	CRC-4 Disabled	Number of bipolar violation events detected in the worst minute since the last resetting of the BPV counter. Updated every minute
Current TIMER	CRC-4 Enabled	Time in seconds from the beginning of the interval. Updated every second. For 24-hour interval – number of 15 minutes intervals the device has been working after power up

5.5 Troubleshooting

Using LEDs

You may locate and correct some failures by using the front panel LEDs (see *Table 5-6). Table 5-7* lists the alarm buffer messages, seen on the ASCII terminal or the RADview SNMP management tool.

Table 5-6. Using LEDs for Troubleshooting

Symptom	Possible Failure	Corrective Action
POWER LED is OFF	Blown fuses	Replace fuses
SYNC is red (modem is not locked)	Line connection between modems	Check line and line connection between modems
Modems are synchronized but DATA LED is OFF (information is not transferred)	Modem to DTE connection	Check connection between modem and DTE
ALM LED is On		See *Table 5-7*

Using the Alarm Buffer

➤ To use the alarm buffer for troubleshooting:

1. When the ALM LED is ON, connect the RADview management tool or an ASCII terminal to view the alarm buffer messages.
2. Enter the Modem Alarm Status screen and watch the alarm states.

   ON indicates an active alarm.

Table 5-7. Using Alarm Buffer for Troubleshooting

Symptom	Possible Failure	Corrective Action
ALM LED is ON and SYNC LOSS A/B alarm is stored in the alarm buffer	Line between modems is not properly connected	Verify and connect the line properly; verify the units' clock type
ALM LED is ON and NO MANAGEMENT LINK alarm is stored in the alarm buffer	Line between modems has exceeded its maximum range; or line quality is poor	Replace unit or contact RAD Technical Support
ALM LED is ON and SELF TEST FAILED alarm is stored in the alarm buffer	Hardware failure	Replace unit
ALM LED is ON and NO MODEM PORT alarm is stored in the alarm buffer	Digital interface is missing, or digital interface is not supported by modem	Mount required digital interface on the ASMi-52CD module

5.6 Frequently Asked Questions

Question: In which cases is it not possible to perform loops in the ASMi-52 modem via the diagnostic screen?

Answer: There are two possible reasons why the Loops options do not appear in the diagnostic screen:

1. The modem has an ETH interface, and since there are no loops in ETH this option does not exist.
2. When two modems are connected as back to back and one of them is in Loop mode, then in the other modem it is not possible to access the loops options.

Question: Why can't I access some fields in the CM-2 Terminal Management screens?

Answer: In the menus of CM-2, there are some parameters you CAN change in each menu, and there are some parameters that you can NOT change in each menu.

This is because the CM-2 manages many different modems, and at RAD we designed one single interface for all the modem cards inside the LRS-24, no matter what modem is being managed. That is why you will see that some parameters are inaccessible for you (because they are accessible for other modems, not ASMi-52CD, for example).

Please remember to navigate the menus via the TAB key, and to change values by pressing the "f" (forward) key, and the "b" (backward) key. Press 'Enter' to select the desired value.

5.7 Technical Support

Technical support for this product can be obtained from the local distributor from whom it was purchased.

For further information, please contact the RAD distributor nearest you or one of RAD's offices worldwide. This information can be found at www.rad.com (offices – About RAD > Worldwide Offices; distributors – Where to Buy > End Users).

Appendix A
Pinouts

A.1 LRSI-F-5

The LRSI-F-5 interface module contains two RJ-45 line connectors and two high-density SCSI-26 female DTE connectors.

Supported DTE Interfaces: V.24, RS-530, V.35, V.36, X.21

Table A-1. SCSI-26 Pinout

Pin	Function	Pin	Function
1	GND	10	DCD (B)
26	–	9	RXC (B)
2	TD (A)	17	RXC (A)
14	TD (B)	11	EXT CLK (B)
3	RD (A)	24	EXT CLK (A)
16	RD (B)	12	TXC (B)
4	RTS (A)	15	TXC (A)
19	RTS (B)	20	DTR (A)
5	CTS (A)	23	DTR (B)
13	CTS (B)	18	LLB
6	DSR (A)	21	RLB
22	DSR (B)	25	Test
8	DCD (A)	7	GND

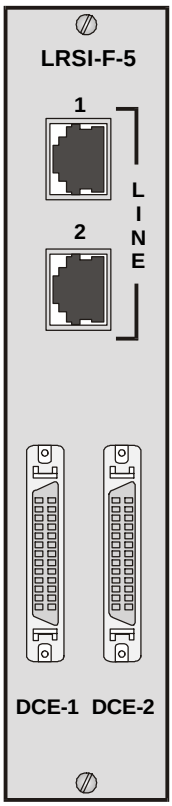


Figure A-1. LRSI-F-5

A.2 LRSI-F-14

The LRSI-F-14 interface module contains two RJ-45 line connectors and two RJ-45 DTE connectors.

Supported DTE Interfaces: Ethernet (IR-ETH, IR-ETH/Q, IR-ETH/QN)

Table A-2. DCE Pinout

Pin	Function
1	Transmit data positive
2	Transmit data negative
3	Receive data positive
4, 5	Not connected.
6	Receive data negative
7, 8	Not connected.

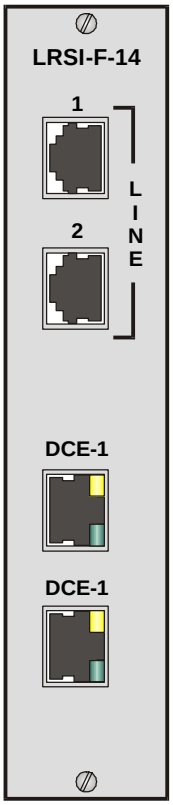


Figure A-2. LRSI-F-14

A.3 LRSI-F-23

The LRSI-F-23 interface module contains two RJ-45 line connectors and two RJ-45 DTE connectors.

Supported DTE Interface: Ethernet (IR-IP)

Table A-3. IP Pinout

Pin	Function
1	Transmit data positive
2	Transmit data negative
3	Receive data positive
4, 5	Not connected.
6	Receive data negative
7, 8	Not connected.

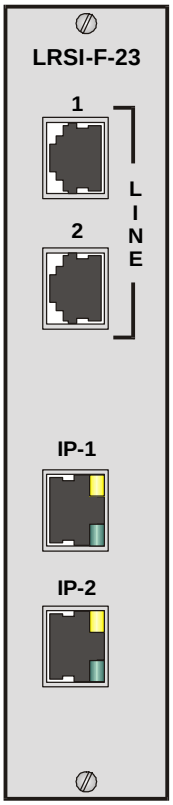


Figure A-3. LRSI-F-23

A.4 LRSI-F-24

The LRSI-F-24 interface module contains two RJ-45 line connectors and two RJ-11 DTE connectors.

Supported DTE Interface: E1 (G.704) balanced

Table A-4. E1 (G.704) Balanced Pinout

Pin	Function
1	Receive data positive
2	Receive data negative
3	Not connected
4	Transmit data positive
5	Transmit data negative
6-8	Not connected

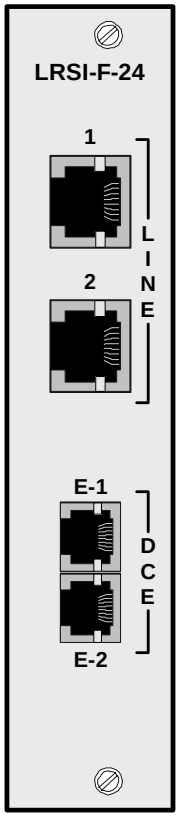


Figure A-4. LRSI-F-24

A.5 LRSI-F-25

The LRSI-F-25 interface module contains two RJ-45 line connectors and one DB-25 DTE connector.

Supported DTE Interface: E1 (G.704) unbalanced

Table A-5. E1 (G.704) Unbalanced Pinout

Pin	Function
23	CH1-Rx
11	CH1-Rx
24	CH1-Tx
12	CH1-Tx
20	CH2-Rx
8	CH2-Rx
21	CH2-Tx
9	CH2-Tx

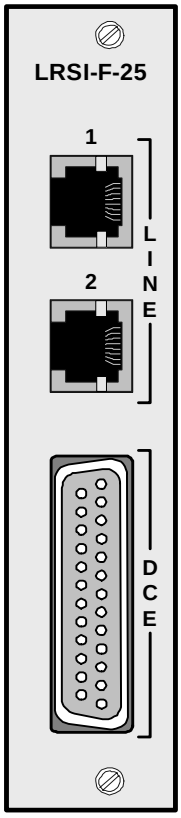


Figure A-5. LRSI-F-25

A.6 Adapter Cable for Unbalanced E1 Interface

When using an unbalanced E1 interface, use the CBL-LRSI25/DB25/UB adapter cable for connecting two BNC unbalanced ports to the DB-25 connector of the LRSI-F-25 interface module. The CBL-LRSI25/DB25/UB cable includes one male DB-25 and four BNC connectors.

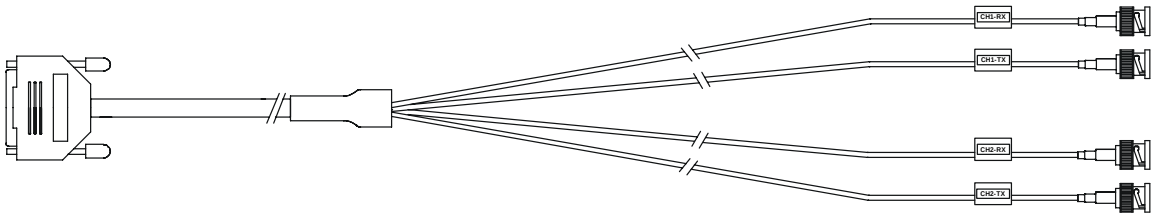


Figure A-6. CBL-LRSI25/DB25/UB Cable

Table A-6. CBL-LRSI25/DB25/UB Cable Pinout

Function		DB-25		BNC
CH-1	RX	23	CH1-RX	1
		11	CH1-RX	2
	TX	24	CH1-TX	1
		12	CH1-TX	2
CH-2	RX	20	CH2-RX	1
		8	CH2-RX	2
	TX	21	CH2-TX	1
		9	CH2-TX	2

Appendix B
Memory and Download

B.1 CPU and Memory Elements

The ASMi-52CD flash contains the following elements:

- **Boot Flash** – Contains the Boot program, essential for the modems initial operations.
- **Flash** – Contains the application program in a compressed state. The boot program decompresses the application to the DRAM.
- **DRAM** – Contains the application while it runs, and all the data and variables the program requires for operation.
- **Peripherals** – Include the SHDSL chipset, the LEDs and other on-board components. The CPU can access these components.
- **CPU** – The main processing unit of the modem – responsible for all control, monitoring and operation of the modem.
- **FPGA** – Responsible for glue logic and proprietary timing implementations.

The CPU first runs the Boot program from the Boot Flash. The Boot program then decompresses one of the two compressed application programs stored in Flash to the DRAM. The uncompressed program runs from the DRAM, and loads the FPGA. This enables the CPU to access all the peripheral devices and begin to run the modem.

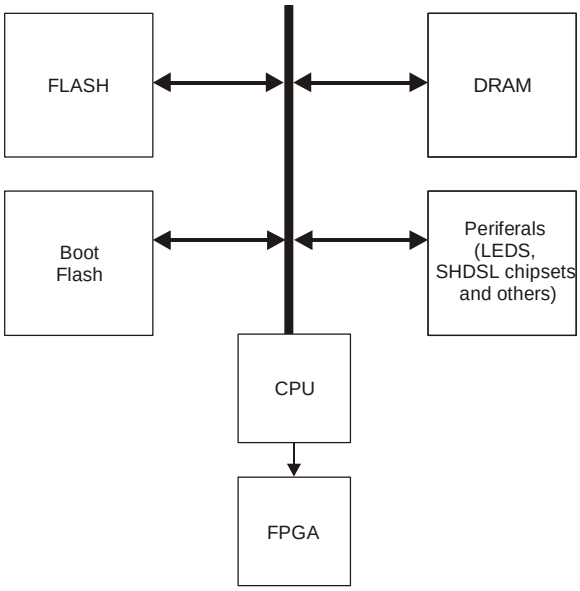


Figure B-1. Memory Map

B.2 Download Procedure

The download function updates the latest software version that exists in the CM-2. The new software is stored (replacing the oldest version stored) in the Flash.

The CM-2 modules with software version 4.0 store up to three different software release files. Previous CM-2 modules store a single software release file for ASMi-52CD.

New software releases are distributed as ***.img** files. The software download procedure consists of the following stages:

- Software download to the CM-2 module from the management station using TFTP or XMODEM protocol (see *Downloading via LAN* and *Downloading via XMODEM* sections).
- Software download from the CM-2 to a single ASMi-52CD card (see *Downloading via CM-2 Flash* section) or to all the ASMi-52CD modems simultaneously (see *Downloading a New Software Version To All ASMi-52CD Modems* section).

Defining Type Of Download

➤ **To define type of download:**

1. From the Main Menu, select **Modem Download**.
2. Select the ASMi-52CD slot and define the modem that you intend to configure.

   The Download Main menu shown in *Figure B-2* appears.

```
DOWNLOAD MAIN MENU
1. Modem Download via LAN
2. Modem Download via XMODEM
3. Modem Download via CM2 FLASH
4. Modem Download via MODEM FLASH
5. Change CM-2 software version
6. View existing versions in the CM-2
Enter download option number ___>
```

Figure B-2. Download Main Menu

Downloading via LAN

When this option is selected, the new software file is transferred from a server to the CM-2, using the TFTP protocol.

➤ **To download via LAN:**

1. From the Modem Download menu, select **Modem Download via LAN**.

   The Download via LAN menu appears (see *Figure B-3*).

2. Enter IP address of TFTP server and file name.

3. Press **<Enter>**.

   The file is transferred via the Ethernet connection of the CM-2, using the TFTP protocol.

```
Download via LAN
IP Address of TFTP server: 000.000.000.000
File name: Insert file name for download
Remote modems: N/A
```

Figure B-3. Download via LAN Menu

Downloading via XMODEM

When this option is selected, the new software file is transferred from a server to the CM-2, using the XMODEM protocol.

➤ **To download via XMODEM:**

1. From the Download Main menu, select **CM2 or Modems Download via XMODEM**.

2. After typing the parameter data, press **<Enter>** to start the download process.

3. Start the XMODEM server, when CM-2 displays the following message:

   The CM-2 is waiting to the XMODEM data. Start the process within one min.

   If after one minute the XMODEM server has not connected properly to the CM-2, the message **The download action has failed** appears.

```
Download via XMODEM
Remote modems: N/A
```

Figure B-4. Download via XMODEM Menu

Downloading via CM-2 Flash

This option should be used when the CM-2 already contains a new software file that you want to download to the modem.

➤ To download via CM-2 Flash:

1. From the Modem Download menu, select **Modem Download via CM2 FLASH**.

   A menu with a list of the available software versions that reside in the CM-2 flash appears (see *Figure B-5*).

2. Select one of the versions by pressing **<F>** or **<B>**.

   The downloading process begins. All the TST LEDs of the corresponding ASMi-52CD module start blinking.

```
MODEMS DOWNLOAD via CM2 FLASH
CM2 containing the following versions:
ID    Modem Type    Version No.    Date          Size          Location
1     ASMi-52CD     0.2            2000-6-6      230k          FLASH2
2     NULL          0.0            0-0-0           0k          EMPTY
3     NULL          0.0            0-0-0           0k          EMPTY

Please choose the ID number
ID NUMBER: 1
Download to Remote Modems: N/A

To change the ID number press f to scroll forward or b to scroll backward
```

Figure B-5. Modem Download via CM2 Flash

Changing Modem Software Version

➤ To change modem software version:

1. From the Modem Download menu, select **Change CM-2 software version**.

   A screen appears with a list of the available software versions that reside in the modem Flash. The first version in the list is the one that is currently running (see *Figure B-6*).

2. Select the modem which software version you want to change by pressing **<F>** or **<B>**.

3. Select the ID NUMBER of the new modem software version by pressing **<F>** or **<B>**.

4. Press **<Enter>**.

```
CHANGING MODEM'S VERSION
                      MODEM NAME: ASMi-52CD
MODEM STATUS          : MASTER PERMANENT
SELECT MODEM          : MODEM 1 LOCAL
Modem containing the following versions:
ID          Version No.      Date
1           0.2              2000-6-6
2           0.2E1            2001-2-22
3           0.0              0-0-0

Please choose the ID number
ID NUMBER: 1
To change the ID number press f to scroll forward or b to scroll backward
```

Figure B-6. Changing Modem Version

Viewing Existing Versions of Modem Software

This display is the same as Change Modem Software Version screen, however it can only be viewed. You cannot select a new version with this option.

➤ To view existing versions of modem software:

1. From the Modem Download menu, select View existing versions in the CM-2.
2. Select modem which software version you want to display and press <Enter>.

   A screen with a list of the available software versions that reside in the modem flash appears. The first version in the list is the version that is currently running (see *Figure B-7*).

```
VIEW MODEM VERSIONS ON MODEM'S FLASH
                      MODEM NAME: ASMi-52CD
MODEM STATUS          : MASTER PERMANENT
SELECT MODEM          : MODEM 1 LOCAL
Modem containing the following versions:
ID          Version No.       Date
1           0.2               2000-6-6
2           0.2E1             2001-2-22
3           0.0               0-0-0
```

Figure B-7. View Modem Versions in Modem Flash

Downloading a New Software Version To All ASMi-52CD Modems

To download a new software version to all the ASMi-52CD modems, use the procedures described in the previous sections to download the same software version to all ASMi-52CD modems in the LRS-24 hub.

➤ To download a new software version to all ASMi-52CD modems:

- From the Download Main menu, type 1, 2, or 3, according to the required type of download.

Appendix C

List of Parameters

This chapter lists:

- Command options to manage the ASMi-52CD modem using an ASCII terminal
- Parameters with their values and explanations.

C.1 Configuring Advanced Modem Parameters

➤ To configure advanced modem parameters:

1. From the Main menu, select **Modem Operation**.
2. Select the ASMi-52CD slot.

   The Modem Advanced Setup menu shown in *Figure C-1* appears. When this menu first appears, all parameters are set to either the default or inactive state to prevent an undesired modem response.

```
MODEM ADVANCED SETUP
                        MODEM NAME:    ASMi-52CD
DEFINE MODEM PORT NUMBER               : 1
MODEM STATUS                           : MASTER
SELECT MODEM                           : MODEM 1 LOCAL
1) STOP STATUS UPDATE                  : DISABLE
2) CHANGE LOCAL MODEM STATUS           : MASTER
3) MANAGEMENT FROM REMOTE MODEM        : NO
4) MODEM MANAGEMENT LINK               : N/A
5) LOAD CONFIGURATION FROM             : N/A      MODEM
6) I-TYPE (FAR_END MODEM TYPE)         : YES
7) MODEM RESET                         : NO
8) FACTORY RESET                       : NO
9) CARD RESET                          : NO
```

Figure C-1. Modem Advanced Setup Menu

Bolded rows in *Figure C-1* indicate parameters applicable to ASMi-52CD. Non-bolded parameters listed on the screen apply to other modems installed in the LRS-24 chassis.

Table C-1 shows the operational parameters and options for ASMi-52CD that can be viewed and/or modified using this screen.

Table C-1. Modem Advanced Setup Screen Parameters

Parameter	Type	Use	Value	Indication
MODEM NAME	Read	Viewing modem type		The modem connected to the terminal is:
			ASMi-52CD	Master ASMi-52CD
			ASMi-52	Standalone modem
MODEM STATUS	Read	Viewing modem configuration mode	MASTER	N/A
SELECT MODEM	Write	Selecting the modem, whose operational parameters are set	MODEM1 LOCAL MODEM2 LOCAL	Operational parameters are set for one of the local modems installed in the LRS-24 chassis
			MODEM1 REMOTE MODEM2 REMOTE	Operational parameters are set for one of the remote local modems
STOP STATUS UPDATE	Write	Controlling status information flow from the modem to CM-2	DISABLE	Enables flow of status information from modem to CM-2.
			ENABLE	Disables flow of status information from modem to CM-2. This may occur when CM-2 services other LRS-24 modems and there is an overflow of alarm messages.
MODEM RESET	Write	Resetting the modem line	YES	Perform reset to modem line
			NO	Do not perform reset to modem line
FACTORY RESET	Write		YES	Reset modem to default settings
			NO	Do not reset modem to default settings
CARD RESET	Write	Resetting parameters of card	YES	Perform reset to card
			NO	Do not perform reset to card

C.2 Configure Transmission Parameters

➤ **To configure the transmission parameters:**

1. From the Main menu, select **Modem Parameters**.
2. Select the ASMi-52CD slot.

   The Modem Setup screen appears (see *Figure C-2*). The Modem Setup menu enables you to set the transmission parameters of the local and remote modems.

3. Configure the transmission parameters. Refer to *Figure C-2* and *Table C-2*.

Bolded rows in *Figure C-2* indicate parameters applicable to ASMi-52CD. Non-bolded parameters listed on a screen apply to other modems installed in the LRS-24 chassis.

4. Configure the E1 parameters by moving the cursor to **NEXT PARMETERS (E1)** field by pressing **<Tab>**, select **YES** by pressing **<f>** or **<b>**, and pressing **<Tab>** again.

   The Modem Setup Menu: E1 Parameters screen appears (see *Figure C-3*). *Table C-3* explains the parameters on this screen.

5. Configure the SHDSL line parameters by moving the cursor to **NEXT PARMETERS (LINE)** field by pressing **<Tab>**, select **YES** by pressing **<f>** or **<b>**, and pressing **<Tab>** again.

   The Modem Setup Menu: Line Parameters screen appears (see *Figure C-4*). *Table C-4* explains the parameters on this screen.

```
MODEM SETUP
                      MODEM NAME:                        ASMi-52CD
DEFINE MODEM PORT NUMBER     : 1
MODEM STATUS                 : MASTER PERMANENT
SELECT MODEM                 : MODEM 1 LOCAL
SYNC/ASYNC             : N/A          CHARACTER LENGTH          : N/A
NO. STOP BIT           : N/A          DATA RATE                 : 128K
PARITY                 : N/A          CD SENSE                  : N/A
CLOCK SOURCE LOC/REM   : INTERNAL     EXT SOURCE:Modem #1  PORT : N/A
INTERFACE              : N/A          RTS/CTS DELAY (0:255      : N/A)
RTS TO DCD             : N/A          DTR TO DSR                : N/A
OUTPUT LEVEL           : N/A          INPUT LEVEL               : N/A
OUTPUT IMPEDANCE       : N/A ohm      INPUT IMPEDANCE           : N/A ohm
CARRIER CONTROL        : N/A          ERROR CORRECTION          : N/A
RATE ADAPTATION METHOD : N/A          AIS                       : N/A
LINE CODING            : N/A          PHANTOM                   : N/A
T1 LINE LENGTH         : N/A
BRIDGING               : N/A          ETHERNET MODE             : HALF-DUP
MASK SIGNAL STATUS     : DATA: NO     RTS : NO    TD : NO    RD: NO
                           DCD : NO    TEST: NO    ERR: NO    SQ: NO
NEXT PARAMETERS(E1)    : NO           NEXT PARAMETERS(LINE)     :NO
```

Figure C-2. Modem Setup Menu

```
          MODEM NAME: ASMI-52CD
DEFINE MODEM PORT NUMBER: 1
MODEM STATUS            : MASTER PERMANENT
SELECT MODEM            : MODEM 1 LOCAL
FRAME MODE(E1) :        : G732N    SYNC(E1)  : CCITT    CRC4(E1) :YES
IDENTICAL SET           : YES   IDLE CODE(E1): ff       BALANCE  :UNBALANCE
TS0 :TRANSP   TS1 : DATA   TS2 : DATA   TS3 : DATA   TS4 : DATA   TS5 : DATA
TS6 : DATA    TS7 : DATA   TS8 : DATA   TS9 : DATA   TS10: DATA   TS11: DATA
TS12: DATA    TS13: DATA   TS14: DATA   TS15: DATA   TS16: DATA   TS17: DATA
TS18: DATA    TS13: DATA   TS20: DATA   TS21: DATA   TS22: DATA   TS23: DATA
TS24: DATA    TS25: DATA   TS26: DATA   TS27: DATA   TS28: DATA   TS29: DATA
TS30: DATA    TS31: DATA
```

Figure C-3. Modem Setup Menu: E1 Parameters

```
          MODEM NAME: ASMI-52CD
DEFINE MODEM PORT NUMBER: 1
MODEM STATUS            : MASTER PERMANENT
SELECT MODEM            : MODEM 1 LOCAL
POWER BACKOFF           : DISABLE         . SNEXT MARGIN    : DISABLE MARGIN
CURRENT MARGIN          : DISABLE MARGIN  . ASYM PSD        : SYMMETRIC
LINE PROB               : FIXED           . PORT CLK SOURCE : MASTER CLOCK
CONFIGURED WIRE         : 4W
TRANSMISSION MODE       : ANNEX B
ATTENUATION THRESHOLD   : 0               . SNR MARGIN THRESHOLD: 0
```

Figure C-4. Modem Setup Menu: Line Parameters

Table C-2. Modem Setup

Parameter	Type	Use	Value	Indication
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified	ASMi-52CD	Master ASMi-52CD
			ASMi-52	Standalone ASMi-52 modem
MODEM STATUS	Read	Viewing the modem configuration control status	MASTER PERMANENT	N/A
DATA RATE	Write	Setting data rate transmitted between the modems	2 wire: 64, 128, 192, 256, 320, 384, 448, 512, 576, 640, 704, 768, 832, 896, 960, 1024, 1088, 1152, 1216, 1280, 1344, 1408, 1472, 1536, 1600, 1664, 1728, 1792, 1856, 1920, 1984, 2048, 2304 kbps 4 wire: 128, 256, 384, 512, 640, 768, 896, 1024, 1152, 1280, 1408, 1536, 1664, 1792, 1920, 2048, 4608 kbps	
CLOCK SOURCE LOCAL/REMOTE	Write	Setting timing mode of local and remote modems	Internal	Clock is supplied by internal oscillator
			System	External source derived from LRS-24 that supplied the system clock to all the hub's modems. (2.048 MHz)
EXT SOURCE	Write	Setting one of the ports as external clock source. E1 interface only	Modem #1 Modem #2	
#n PORT	Write	Selecting clock for an indicated port (n) as external or internal	DCE	Clock for indicated port connection is internal
			DCE-EXT	Clock for indicated port connection is external
BRIDGING	Write	Selecting Ethernet traffic control function of the modem. For a channel with serial data interface, this field always shows N/A, and cannot be changed	FILTER	The internal bridge of the channel is enabled, and filters the traffic sent to the remote end.
			TRANS	The internal bridge of the channel is disabled, and the Ethernet traffic is transferred transparently.
			N/A	

Parameter	Type	Use	Value	Indication
ETHERNET MODE	Write	Selecting Ethernet LAN traffic transfer mode of the modem. For a channel with serial data interface, this field always shows N/A, and cannot be changed	HALF_DUP FULL_DUP N/A	Half duplex operation Full duplex operation

Table C-3. Modem Setup: E1 Parameters

Parameter	Type	Use	Value	Indication
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified	ASMi-52CD ASMi-52	Master ASMi-52CD Standalone ASMi-52 modem
DEFINE MODEM PORT NUMBER	Write	Selecting the number of the port to be configured		Default is selected port
MODEM STATUS	Read	Viewing the modem configuration control status	MASTER PERMANENT	N/A
FRAME MODE	Write	Selecting the framing mode	Unframed G732N G732S transparent	Stream of bits at 2.048 Mbps Timeslot 0 contains sync word 16 frames per multiframe, timeslot 16 is passed transparently.
SYNC	Write	Selecting time required for the E1 port to return to normal operation after sync loss	CCITT Fast 62411	As per requirements of ITU-T Rec.G.732 After 1 sec As per requirements of AT&T TR-62411 (after 10 sec).
CRC4	Write	Enabling generation and checking of check bits as per CRC-4 polynomial specified by ITU G.704. Available only for the G732N framing mode.	YES NO	Enable CRC-4 code generation No CRC-4 code generation
IDLE CODE	Write	Selecting the code transmitted to fill idle (unused) timeslot in the E1 frames	Hex value from 00 to FF	
BALANCE	Read	Indicating whether the interface is balanced or unbalanced	Balanced Unbalanced	

Parameter	Type	Use	Value	Indication
TS	Write	Assigning each timeslot to carry data	DATA NOT_ CONNECT	• TS0 may be looped or transparent: **Looped:** TS0 is sent back to the E1 interface, when operating opposite remote units with a serial data interface. **Transparent:** TS0 is transmitted to the remote modem. • With G732S transparent framing, TS0 is always transparent and TS16 is always connected. • When operating opposite an ASMi-52CD with V.35 interface, assign at least six timeslots, including timeslot 0 to carry data.

Table C-4. Modem Setup: Line Parameters

Parameter	Type	Use	Value	Indication
MODEM NAME	Read	Identifying the modem type whose status is being viewed or modified	ASMi-52CD ASMi-52	ASMi-52CD Standalone ASMi-52 modem
DEFINE MODEM PORT NUMBER	Write	Selecting the number of the port to be configured		Default is selected port
MODEM STATUS	Read	Viewing the modem configuration control status	MASTER PERMANENT	N/A
POWER BACKOFF	Write	Determining whether to use the transmitted power backoff	Enable Disable	Enable transmitted power backoff Disable transmitted power backoff
SNEXT MARGIN	Write	Selecting the minimum desired target margin with a worst case self next noise model given current loop insertion (49 SHDSL next is considered the worst case). Available only if the rate adaptation is enabled (see line probing configuration below).	Integer between -10 and 10 Disable	Selected Snext margin value Disable Snext margin. Allows the use of all line rates, regardless of line condition

Parameter	Type	Use	Value	Indication
CURRENT MARGIN	Write	Selecting the minimum desired target margin for the local line conditions during the startup sequence. Available only if the rate adaptation is enabled (see line probing configuration below)	Integer between -10 and 10	Selected current margin value
			Disable	Disable current margin. Allows the use of all line rates, regardless of line condition
ASYM PSD	Write	Defining the amount of power applied to the information signal in order to achieve a satisfactory level of signal strength at the receiving end of the circuit	Symmetric	Supported in both Annex A and Annex B modes. • Annex A at 768 kbps • Annex B at 2048 kbps.
			Asymmetric	
LINE PROB	Write	Indicating whether the modem should perform a line probe in order to find the best possible rate of transmission	Fixed	No line probing ASMi-52CD/4 modems support fixed line probing only.
			Adaptive	Force a line probing ASMi-52CD/2 modems support adaptive mode only.
PORT CLK SOURCE	Write	Setting timing mode of the current modem (non-E1 modems only)	Master	Selected modem operated with the clock set by the Clock Source field of the Modem Setup menu (see *Figure C-2*)
			External	External source derived from the adjacent DTE port
CONFIGURED WIRE	Write	Indicating whether the modem is operating over 2 or 4 wires	2	Selecting the 2-wire operation mode disables pin 1 and pin 2 of the RJ-45 line connector.
			4	
TRANSMISSION MODE	Write	Selecting the transmission mode	Annex A	
			Annex B	
ATTENUATION THRESHOLD	Write	Setting the acceptable difference (in dB) between the power transmitted from the ASMi-52CD modem and the power received by the remote modem.	0 dB to 127 dB	Minor alarm is generated (LOOP ATTN. OVER LINE A/B), if selected loop attenuation threshold value is exceeded
SNR MARGIN THRESHOLD	Write	Setting the signal-to-noise ratio threshold.	0 dB to 15 dB	Minor alarm is generated (SNR MARGIN OVER LINE A/B), if the selected signal-to-noise ratio threshold is exceeded

C.3 Displaying Modem Status

➤ **To display the modem status:**

1. From the Main menu, select **Modem Status**.
2. Select the ASMi-52CD slot.

   The Modem Status screen appears (see *Figure C-5*). The Modem Status screen provides information on the system interfaces and front panel LED status. *Table C-5* explains the parameters on this screen.

3. To display the second page of parameters, move the cursor to **NEXT PARMETERS** field by pressing **<Tab>** and select **YES** by pressing **<f>** or **<b>**.

   The second page of the Modem Status screen appears (see *Figure C-6*). *Table C-6* explains the parameters on this screen.

```
MODEM STATUS
                      MODEM NAME:ASMi-52CD
DEFINE MODEM PORT NUMBER: 1
SELECT MODEM       : MODEM 1 LOCAL  REMOTE MODEM                  : NULL
INTERFACE MODULE   : LRSI-F-14      REMOTE SLOT                   : N/A
MODEM PORT         : ETHERNET       REMOTE MODEM LINE CONNECTOR:TERM.BLOCK
SW VERSION         : 0.2E1          REMOTE MODEM FRONT PANEL      : N/A
HW VERSION         : 00 .00         HW PANEL VERSION              : 03
LED STATUS:   1)RTS: OFF    2)DCD: OFF     3)TEST: OFF      4)ERR: ON
              5)ELE-LOW: ON 6)ELE-AIS: OFF 7)OPT-LOW: OFF   8)OPT-AIS: OFF
LINK QUALITY       : N/A            PS PHANTOM STATUS             : N/A
BPV ERROR          : N/A            CHASSIS                       : N/A
FIBER OPTIC ERROR  : N/A            WAVE LENGTH                   : 850
LINE UTILITY       : 01 %
BERT RUN TIME      : 0              BERT ERR SECONDS              : 0
BERT SYNC LOSS     : 0              BERT PRE FEC                  : 0
BERT POST FEC      : 0
NEXT PARAMETERS    : NO
```

Figure C-5. Modem Status Screen

Bolded rows in *Figure C-5* indicate parameters applicable to ASMi-52CD. Non-bolded parameters listed on a screen to other modems installed in the LRS-24 chassis.

The Modem Status parameters and values are explained in *Table C-5*.

Table C-5. Modem Status Screen Parameters

Parameter	Type	Use	Value	Indication
MODEM NAME	Read	Viewing the modem type	ASMi-52CD	Master ASMi-52CD
			ASMi-52	Standalone ASMi-52 modem
SELECT MODE/	Read	Viewing the selected modem	MODEM1 LOCAL MODEM2 LOCAL	Operational parameters are set for one of the local modems installed in the LRS-24 chassis.
			MODEM1 REMOTE MODEM2 REMOTE	Operational parameters are set for one of the remote local modems
REMOTE MODEM	Read	Viewing the remote modem type	ASMi-52	Standalone ASMi-52 modem
REMOTE MODEM LINE CONNECTOR	Read	Viewing the type of connector at the remote modem		
INTERFACE MODULE	Read	Viewing the type of interface module in LRS-24 chassis.	LRSI-14	LRSI-F-14 or LRSI-B-14
			LRSI-23	LRSI-F-23 or LRSI-B-23
			LRSI-5	LRSI-F-5 or LRSI-B-5
			LRSI-24	LRSI-F-24 or LRSI-B-24
			LRSI-25	LRSI-F-25 or LRSI-B-25
MODEM PORT	Read	Viewing the type of digital interface mounted on the modem. This parameter is needed to associate a DCE connector with several digital interfaces mounted on the ASMi-52CD module	ETHERNET	IR-ETH
			IR-ETH-Q	IR-ETH/Q
			IR-ETH-QN	IR-ETH/QN
			IR-IP	IR-IP
			V.35	V.35
			RS-530	RS-530
			X.21	X.21
			E1	E1
SW VERSION	Read	Viewing current software version		
HW VERSION	Read	Viewing current hardware version		
HW PANEL VERSION	Read	Viewing current LRSI panel hardware version		
LED STATUS	Read	Viewing status of front panel LEDs	ON, OFF (for interpretation of the LED states, see *Chapter 2*	

```
                    MODEM NAME:ASMi-52CD
DEFINE MODEM PORT NUMBER: 1
SELECT MODEM       : MODEM 1 LOCAL
RATE SUPPORTED     : 2M                PS1 TYPE          : NONE
SHDSL MODE         : STU-C             PS2 TYPE          : NONE
WIRE MODE          : 2W                BOX TYPE          : N/A
FRAMER TYPE        : SLOTTED E1        ACTUAL ANNEX      : ANNEX B
LINE STATUS A      : SYNC              LINE STATUS B     : SYNC N/A
SHDSL STATUS A     : DATA              SHDSL STATUS B    : N/A
LINE RATE A        : 2048K + 8K        LINE RATE B       : N/A
LINE TOTAL RATE    : 2048K + 8K        ACTUAL PSD        : ASYM PSD DISABLE
EOC COMP           : PROPRIETARY       TIP RING          : NORMAL
BERT PATTERN       : N/A
```

Figure C-6. Modem Status Screen: More Parameters

Table C-6. Modem Status Screen: Second Screen Parameters

Parameter	Type	Use	Value	Indication
MODEM NAME	Read	Viewing the modem type	ASMi-52CD	Master ASMi-52CD
			ASMi-52	Standalone ASMi-52 modem
SELECT MODEM	Write	Selected a modem	MODEM1 LOCAL MODEM2 LOCAL	Operational parameters are set for one of the local modems installed in the LRS-24 chassis.
			MODEM1 REMOTE MODEM2 REMOTE	Operational parameters are set for one of the remote local modems
RATE SUPPORTED	Read	Data rate supported by the modem	2M	
			4M	
PS1 TYPE	Read	Type of power supply 1 (remote standalone only)	AC, DC	
PS2 TYPE	Read	Type of power supply 2 (remote standalone only)	AC, DC	
SHDSL MODE	Read	Modem location	STU-C	Central
WIRE MODE	Read	Line interface type	2W	2-wire
			4W	4-wire
BOX TYPE	Read	Type of remote unit enclosure	PLASTIC	
			METAL	
FRAMER TYPE	Read	SHDSL framer type	N*64	
			E1 slotted (E1 only)	

Parameter	Type	Use	Value	Indication
ACTUAL ANNEX	Read	Annex compatibility	ANNEX A ANNEX B	
LINE STATUS A	Read	Status of Line A	SYNC NOT SYNC	
LINE STATUS B	Read	Status of Line B	SYNC NOT SYNC	
SHDSL STATUS A	Read	Status of DSP A	IDLE HANDSHAKE TRAINING FRAME IN SYNC DATA DIGITAL LOOPBACK CORE LOOPBACK	
SHDSL STATUS B	Read	Status of DSP B	IDLE HANDSHAKE TRAINING FRAME IN SYNC DATA DIGITAL LOOPBACK CORE LOOPBACK	
LINE RATE A	Read	Line A rate		
LINE RATE B	Read	Line B rate		
LINE TOTAL RATE	Read	Line A and Line B combined rate (no line B for 2-wire modems)		
Actual PSD	Read	Current power spectral density type	RATE PSD UNKNOWN ASYNC PSD DISABLE ASYNC R1 ENABLE ASYNC R2 ENABLE	
EOC COMP	Read	Compatibility of the embedded operation channel	STANDARD PROPRIETARY	
TIP RING	Read	Wire polarity detection method	NORMAL REVERSED	

C.4 Displaying the Modem Log File

➤ **To display the modem log file:**

1. In the Modem Setup menu, select **Modem Log File**.
2. Select the ASMi-52CD slot.

   A typical Modem Log File screen is shown in *Figure C-7*. The Modem Log File screen enables you to view in chronological order all the events pertaining to the modem location specified in the Modem Select field: LOCAL or REMOTE. The modem type is shown in the Modem Name field: ASMi-52CD, or ASMi-52 (remote standalone).

```
MODEM LOG FILE
                      MODEM NAME:ASMi-52CD
DEFINE MODEM PORT NUMBER    : 1
SELECT MODEM                : LOCAL
CODE     STATE      DESCRIPTION                    TIME       DATE
 68      ON         NearEndSyncLossB               14:40      2003-03-11
 56      ON         NearEndIncompatibleConnectors  14:40      2003-03-11
 08      ON         NearEndSyncLoss                14:40      2003-03-11


THERE ARE NO MORE PAGES AT THE MOMENT
```

Figure C-7. Modem Log File Screen

Appendix D

IR-ETH Ethernet Card

D.1 Introduction

The IR-ETH Ethernet card is a bridge that converts Ethernet electrical levels to TTL levels and Ethernet protocol to HDLC protocol. It provides long distance transmission and avoids the Ethernet collision limitation. It is mounted on the ASMi-52CD modem module, installed in the LRS-24 hub.

Typical Application

A typical application of the ASMi-52CD module, on which the IR-ETH Ethernet card is mounted, is shown in *Figure D-1.* The LAN connection is made by using the LRSI-F-14 Interface module installed in the upper section of the LRS-24F chassis, or LRSI-B-14 installed in the back section of the LRS-24B chassis.

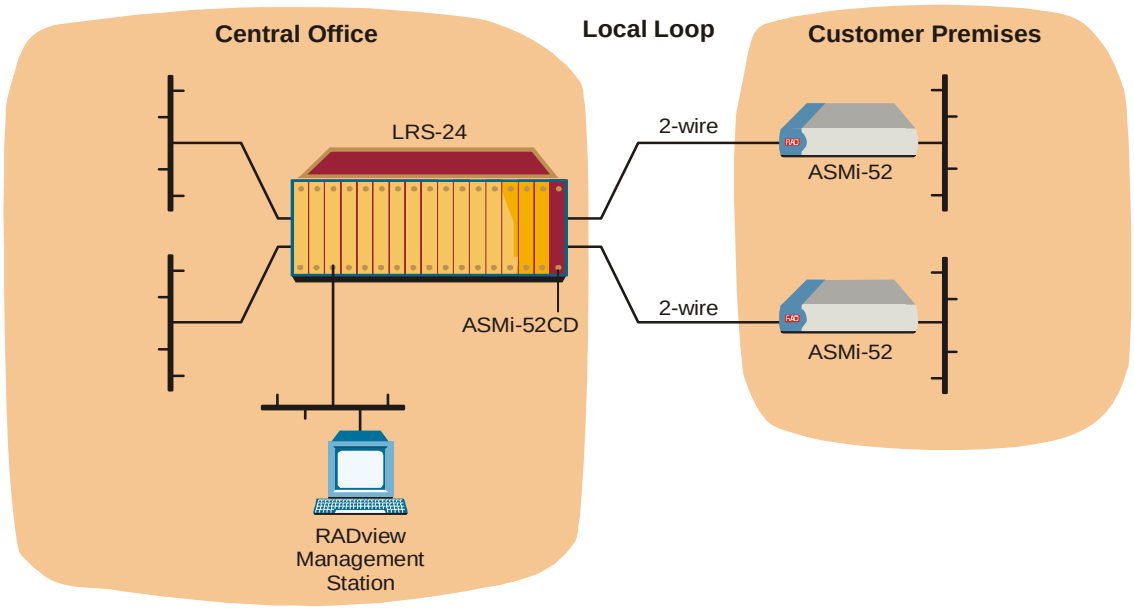


Figure D-1. Typical Application of ASMi-52CD with IR-ETH

Physical Description

Figure D-2 shows the IR-ETH Ethernet card. Four connectors are provided to connect the Ethernet card to the top of the main module card. The IR-ETH Ethernet card contains a LED and 4-section DIP switch.

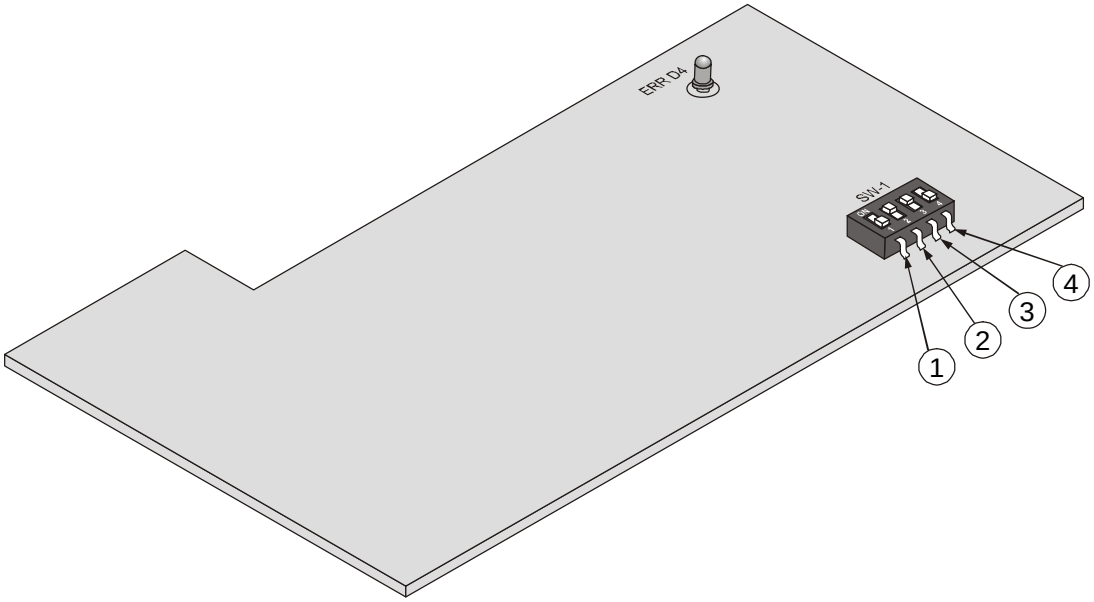


Figure D-2. Location of DIP Switch and ERR LED on IR-ETH Ethernet Card

ERR LED

The red ERR LED turns ON in case of bridge buffer overrun.

DIP Switch

The 4-section DIP switch is used to configure LAN data transmission over the line. See *Table D-1* for details.

Setting the DIP Switch

Set the DIP switch on the IR-ETH Ethernet card according to *Table D-1*. The functions of Section 1 and Section 3 are software-controlled from the supervision terminal (see *Appendix C*, MODEM SETUP menu). These SW-1 sections are permanently set to OFF and may not be set manually.

Table D-1. DIP Switch Settings

Switch	Description (Default setting in bold)	
1. SQ/FD	ON:	Ethernet full duplex mode
	OFF:	Ethernet half duplex mode
2. CMP	**ON**:	Strips padding bits inserted in 64-byte frame
	OFF:	Transmits frames over WAN as is
3. FIL	ON:	Passes only frames destined for another LAN
	OFF:	Disables LAN filter; passes all frames transparently
4. (NC)	–	

D.2 Technical Specifications

General	*LAN Table*	10,000 addresses
	Filtering and Forwarding	15,000 pps
	Buffer	256 frames
	Delay	1 frame
	Standard	Conforms to IEEE 802.3/Ethernet
LAN		
	Data Rate	10 Mbps (20 Mbps 10BaseT FDX)
	Protocol	HDLC
WAN		
	Data Rate	According to the modem transmission rate
	Connector	RJ-45

D.3 Installation and Operation

This section describes:

- IR-ETH Ethernet card installation on the ASMi-52CD modem module
- LRSI-F-14 interface module installation in the LRS-24 hub

For hub installation and operation of the ASMi-52CD module, see *Chapter 2*.

Caution The ASMi-52CD and IR-ETH cards contain components sensitive to electrostatic discharge (ESD). To prevent ESD damage, do not touch the module components or connectors.

Installing IR-ETH Card

➤ **To install the Ethernet card:**

1. Set the DIP switch on the IR-ETH Ethernet card according to *Table D-1*.
2. Press the IR-ETH Ethernet card (with connectors facing down) against the ASMi-52CD module connectors.

Installing Interface Module

Check that the LRSI-F-14 interface module (or LRSI-B-14), shown in *Figure D-3,* was supplied. The fuses are shown in *Figure D-4*.

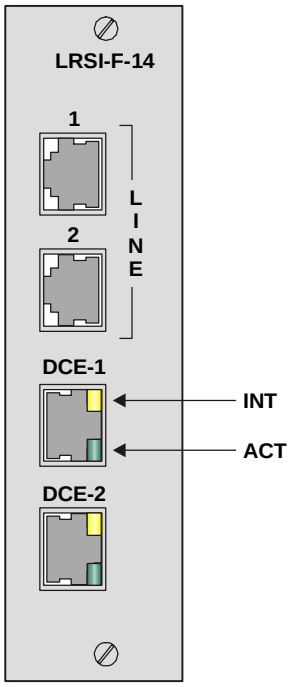


Figure D-3. LRSI-F-14 Interface Module

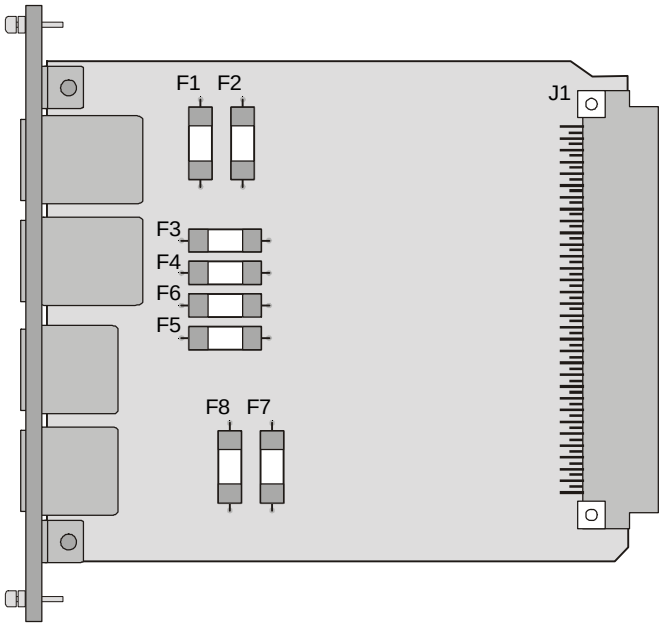


Figure D-4. LRSI-F-14 Interface Module Fuses

IR-ETH LED Indicators

Table D-2 lists the IR-ETH LED functions and describes their functions.

Table D-2. IR-ETH Bridge LED Indicators

LED Name	Description	Color
INT	ON – Good link integrity	Green
ACT	ON – Data is received from the Ethernet attached segment or data is transmitted from the modem to the Ethernet segment	Yellow

Installing the Interface Module

➤ **To install LRSI-F-14 into the LRS-24 hub:**

1. Insert the LRSI-F-14 module in the upper section of the LRS-24F chassis above the module, or the back section of LRS-24B.
2. Fasten the screws to secure the module to the LRS-24 frame for good grounding of the module panel.

D.4 Connections

For IR-ETH card installation either a straight or a cross cable may be required to connect the LRSI-F-14 DCE-1 (DCE-2) connector to the LAN. Use a cross cable when connecting to a port that does not implement the crossover function internally. Otherwise, use a straight cable.

Note *Hubs usually do implement the crossover function internally while NICs and other devices do not.*

Use *Table D-3* for the pin assignment of the IR-ETH RJ-45 connector needed when preparing the LAN cable. For the pin assignment of the LRSI-F-14 line connector, see *Chapter 2*.

Table D-3. Pin Assignment of Ethernet RJ-45 Connector

Pin No.	ID	Function	Direction
1	Tx+	Transmit – positive lead	Output
2	Tx–	Transmit – negative lead	Output
3	Rx+	Receive – positive lead	Input
4, 5	–	Not connected.	–
6	Rx–	Receive – negative lead	Input
7, 8	–	Not connected.	–

Appendix E

IR-ETH/Q Ethernet Card

E.1 Introduction

IR-ETH/Q is an interface module for RAD modems, used for converting the Ethernet 10BaseT electrical levels to the modem TTL levels. It also converts the Ethernet protocol to HDLC to enable long distance transmission and avoid the Ethernet collision limitation. The IR-ETH/Q module also supports IEEE 802.1/Q frames.

IR-ETH/Q includes an internal, self-learning Ethernet bridge, which enables a high performance link between two Ethernet segments at a low transmission rate. The low-speed HDLC transmission is sent over the link using the modem modulation technique. It is converted back to an Ethernet signal at the remote modem.

Application

Figure E-1 shows a typical application of the ASMi-52CD module, on which the IR-ETH/Q is mounted. The LAN connection is made by installing the LRSI-F-14 interface module in the upper section of the LRS-24F hub, or installing the LRSI-B-14 in the back section of the LRS-24B hub.

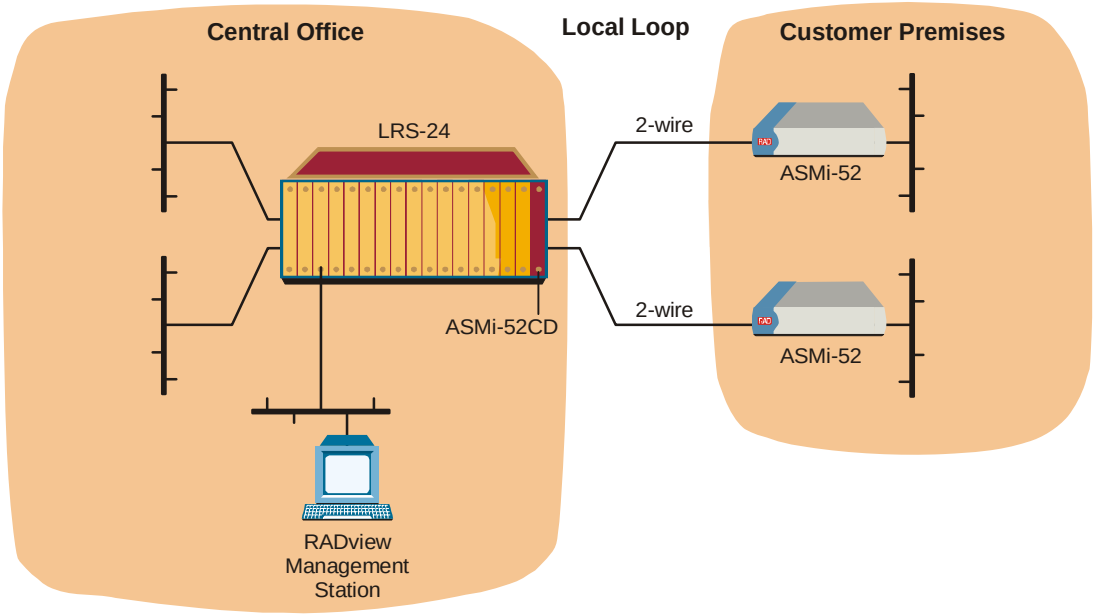


Figure E-1. Typical Application of ASMi-52CD with IR-ETH/Q

Physical Description

Figure E-2 shows the IR-ETH/Q Ethernet card. Four connectors are provided to connect the Ethernet card to the top of the main module card. The IR-ETH/Q Ethernet card contains a 6-section DIP switch.

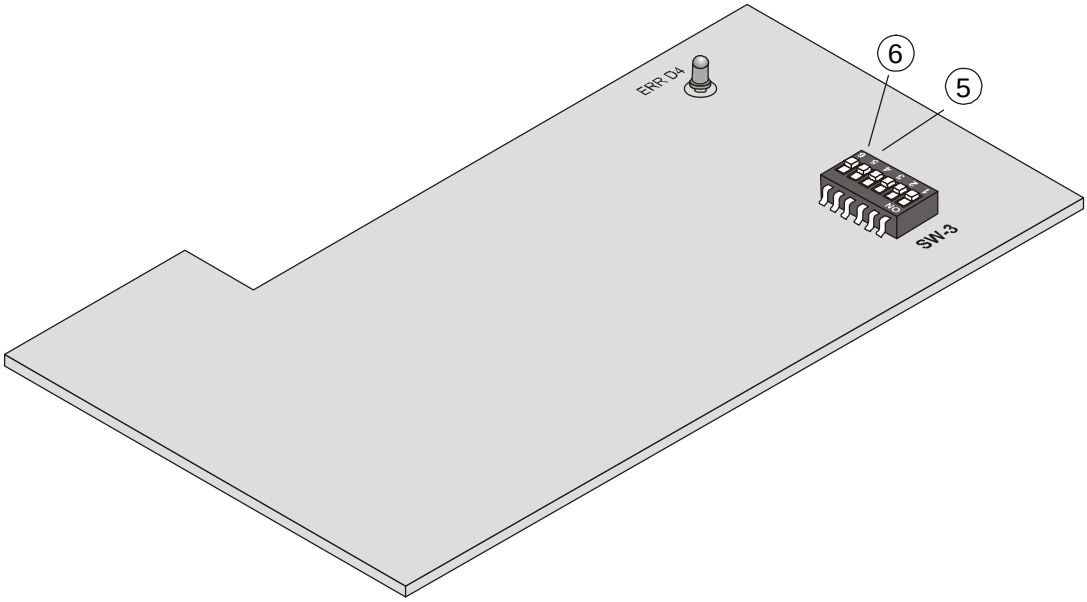


Figure E-2. Location of DIP Switch on IR-ETH/Q Ethernet Card

DIP Switch Settings

Configure the IR-ETH/Q module by setting the DIP switch in accordance with *Table E-1*. Unlike IR-ETH module, the IR-ETH/Q Ethernet mode and filtering cannot be controlled via the ASMi-52CD software and must be set via the SW-3 DIP switch.

Table E-1. DIP Switch Settings

Section Number	Name	Description (Default setting in bold)
4	–	Reserved for future use. Must always be set to **OFF**.
5	FD/HD	ON – Ethernet bridge full duplex mode **OFF** – Ethernet bridge half duplex mode
6	TRANS/FIL	ON – Disables LAN filter; passes all frames transparently **OFF** – Passes only frames destined for another LAN

E.2 Technical Specifications

General	*LAN Table*	2,000 addresses
	Buffer	200 kbytes
LAN	*Standard*	Conforms to IEEE 802.3/Ethernet and supports IEEE 802.1/Q frames
	Data Rate	10 Mbps (20 Mbps 10BaseT FDX)
	Connectors	10BaseT (UTP): Shielded RJ-45
WAN	*Protocol*	HDLC
	Data Rate	According to the modem transmission rate
	Connector	RJ-45

E.3 Installation and Operation

This section describes:

- IR-ETH/Q Ethernet card installation on the ASMi-52CD modem module
- LRSI-F-14 interface module installation in the LRS-24 hub

For hub installation and operation of the ASMi-52CD module, see *Chapter 2*.

Caution The ASMi-52CD and IR-ETH/Q cards contain components sensitive to electrostatic discharge (ESD). To prevent ESD damage, do not touch the module components or connectors.

Installing IR-ETH/Q Card

➤ **To install the IR-ETH/Q Ethernet card:**

1. Set the DIP switch on the IR-ETH/Q Ethernet card according to *Table E-1*.
2. Press the IR-ETH/Q Ethernet card (with connectors facing down) against the ASMi-52CD module connectors.

Installing Interface Module

Check that the LRSI-F-14 interface module (or LRSI-B-14), shown in *Figure E-3,* was supplied. The fuses are shown in *Figure E-4*.

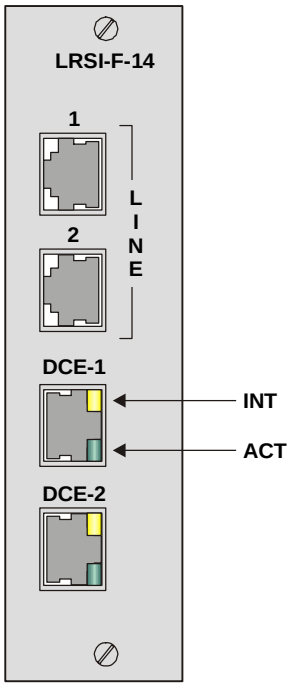


Figure E-3. LRSI-F-14 Front Panel

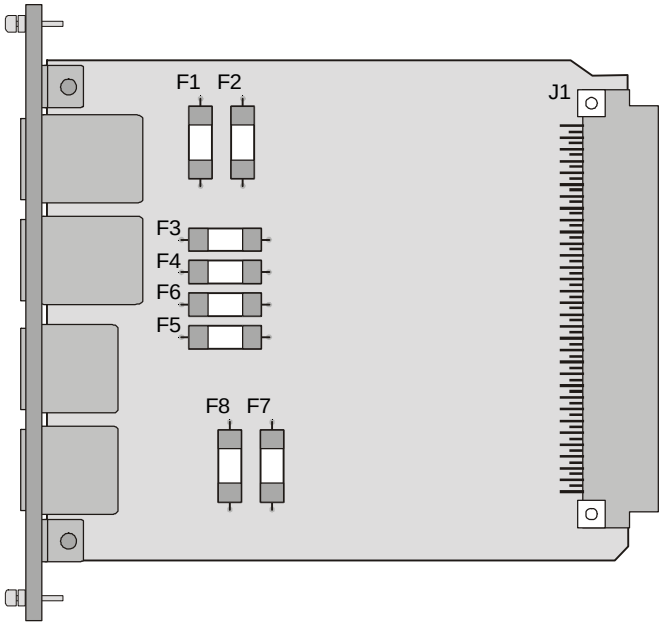


Figure E-4. LRSI-F-14 Interface Module Fuses

IR-ETH/Q LED Indicators

Table E-2 lists the IR-ETH/Q LED indicators (see *Figure E-3*) and describes their functions.

Table E-2. IR-ETH/Q LED Indicators

LED Name	Description	Color
INT	ON – Good link integrity	Green
ACT	ON – Data is received from the Ethernet attached segment or data is transmitted from the modem to the Ethernet segment	Yellow

ERR LED Indicator

When illuminated (red), the ERR on the board indicates LAN/WAN error.

Installing the Interface Module

➤ **To install LRSI-F-14 into the LRS-24 hub:**

1. Insert the LRSI-F-14 module in the upper section of the LRS-24F chassis above the module, or the back section of LRS-24B.
2. Fasten the screws to secure the module to the LRS-24 frame for good grounding of the module panel.

E.4 Connections

For IR-ETH/Q card installation either a straight or a cross cable may be required to connect the LRSI-F-14 DCE-1 (DCE-2) connector to the LAN. Use a cross cable when connecting to a port that does not implement the crossover function internally. Otherwise, use a straight cable.

Note *Hubs usually do implement the crossover function internally while NICs and other devices do not.*

Use *Table E-3* for the pin assignment of the IR-ETH/Q RJ-45 connector needed when preparing the LAN cable. For the pin assignment of the LRSI-F-14 line connector, see *Chapter 2*.

Pin Assignment

Table E-3. Pin Assignment of Ethernet RJ-45 Connector

Pin No.	ID	Function	Direction
1	Tx+	Transmit – positive lead	Output
2	Tx–	Transmit – negative lead	Output
3	Rx+	Receive – positive lead	Input
4, 5	–	Not connected	–
6	Rx–	Receive – negative lead	Input
7, 8	–	Not connected	–

Appendix F

IR-ETH/QN Ethernet/Fast Ethernet Card

F.1 Introduction

The IR-ETH/QN interface module includes a high performance self-learning Fast Ethernet bridge, which is connected to the LAN via a single 10BaseT or 100BaseT port, operating in full- or half-duplex and providing simple and cost-effective interconnection between 10/100BaseT LANs. The IR-ETH/QN interface module also supports IEEE 802.1/P frames and IEEE 802.1/Q frames, enabling VLAN applications.

The module automatically learns MAC addresses of the LAN to which it is connected. Its LAN table stores up to 1,024 addresses with 5-minute automatic aging. Filtering and forwarding is performed at the maximum theoretical rate of 150,000 packets per second (wire speed). The buffer with 0.512 Mbit SRAM can hold 85 frames with a throughput latency of one frame. The forwarding of the multicast messages from LAN to WAN can be disabled. The module also supports fault propagation.

F.2 Application

Figure F-1 shows a typical application of ASMi-52CD operating opposite two remote ASMi-52 modems connected to the 100BaseT LANs.

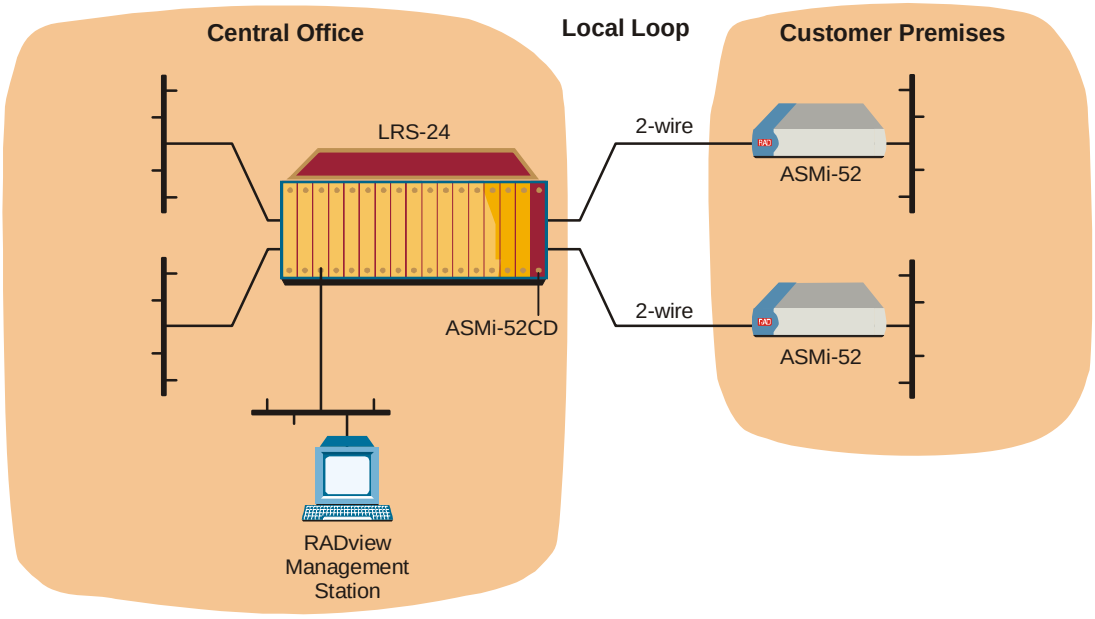


Figure F-1. Typical Application of ASMi-52CD with IR-ETH/QN

F.3 Technical Specifications

Bridge	*LAN Table*	1,024 MAC addresses
	Aging	5 minute, automatic
	Filtering and Forwarding Rate	150,000 packets per second
	Buffer Size	85 frames
	Delay	1 frame
LAN	*Standard*	IEEE 802.3/Ethernet V.2 (relevant parts), IEEE 802.1q (relevant parts), 802.1p, 802.3x
	Data Rate	• 10BaseT: 10 Mbps (20 Mbps in full-duplex) • 100BaseT: 100 Mbps (200 Mbps in full-duplex)
	Line Code	• 10BaseT: Manchester • 100BaseT: MLT3
	Connector	Shielded RJ-45 socket

WAN	*Protocol*	HDLC
	Data Rate	According to the modem transmission rate

F.4 Installation and Operation

This section describes:

- Setting the IR-ETH/QN DIP switches
- Installing the IR-ETH/QN board on the ASMi-52CD modem
- Installing LRSI-F-14 interface module.

Configuring IR-ETH/QN

Configure the IR-ETH/QN module by setting the DIP switches SW1 and SW2 in accordance with *Figure F-2*, *Table F-1* and *Table F-2*.

Note *To make the changes effective, you must remove the ASMi-52CD module from the LRS-24 chassis and insert it back again.*

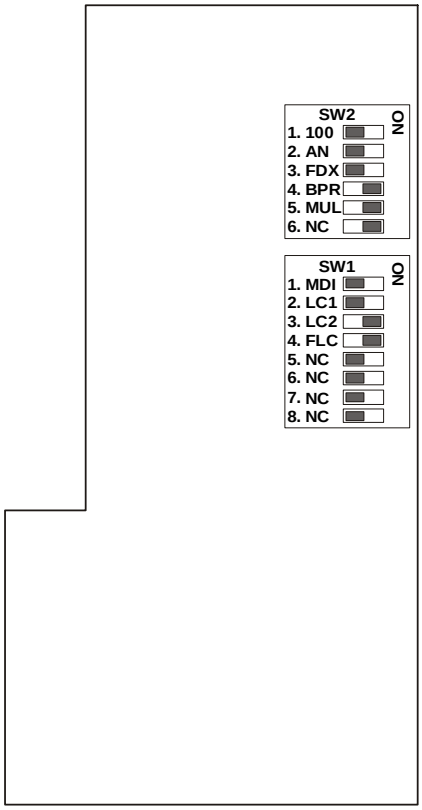


Figure F-2. DIP Switch Locations on the IR-ETH/QN Module

Table F-1. DIP SW1 Switch Settings

Section	Name	Description	Possible Settings (Default settings in bold)
1	MDI	Enables or disables automatic MDI/MDIX crossover	ON – Automatic MDI/MDIX crossover is enabled **OFF –** Automatic MDI/MDIX crossover is disabled
Note: *Automatic MDI/MDIX crossover function is available only if the autonegotiation is enabled (see Table F-2).*			
2	LC1	–	Permanently set **OFF** at the factory
3	LC2	–	Permanently set **ON** at the factory
4	FLC	Enables or disables flow control	**ON** – Flow control is enabled OFF – Flow control is disabled
5-8	NC	–	Permanently set **OFF** at the factory

Note

Sections 2, 3, 5, 6, 7 and 8 of the SW1 DIP switch are factory-set and must not be moved by the user.

Table F-2. DIP Switch SW2 Settings

Section	Name	Description	Possible Settings (Default settings in bold)
1	100	Selects the LAN speed	ON – LAN speed is set to 10 Mbps **OFF** – LAN speed is set to 100 Mbps
2	AN	Controls the LAN autonegotiation	ON – LAN autonegotiation is disabled **OFF** – LAN autonegotiation is enabled
3	FDX	Selects the LAN mode	ON – LAN half duplex mode **OFF** – LAN full duplex mode
4	BPR	Controls the backpressure	**ON** – Backpressure is enabled OFF – Backpressure is disabled
5	MUL	Controls LAN to WAN multicasting	OFF – Multicast messages from LAN to WAN are blocked **ON** – Multicast messages from LAN to WAN are not blocked
6	NC	–	Permanently set **ON** at the factory

Notes

- *Section 6 of the SW2 DIP switch is factory-set and must not be moved by the user.*
- *When autonegotiation is enabled, LAN speed and LAN mode are configured automatically (sections 1 and 3 are disabled).*

Installing IR-ETH/QN Card

➤ **To install the IR-ETH/QN card:**

1. Press the IR-ETH/QN Ethernet card (with connectors facing down) against the ASMi-52CD module connectors.
2. Fasten IR-ETH/QN to the modem.

Installing the Interface Module

Check that the LRSI-F-14 interface module (or LRSI-B-14), shown in *Figure F-3,* was supplied. The fuses are shown in *Figure F-4*.

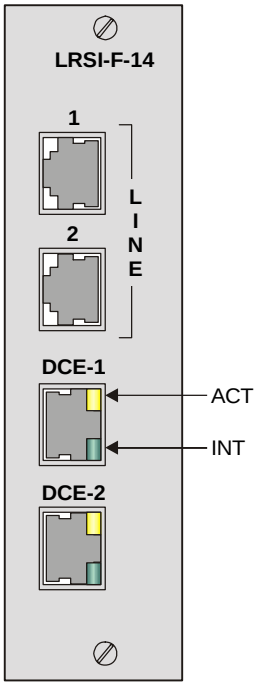


Figure F-3. LRSI-F-14 Front Panel

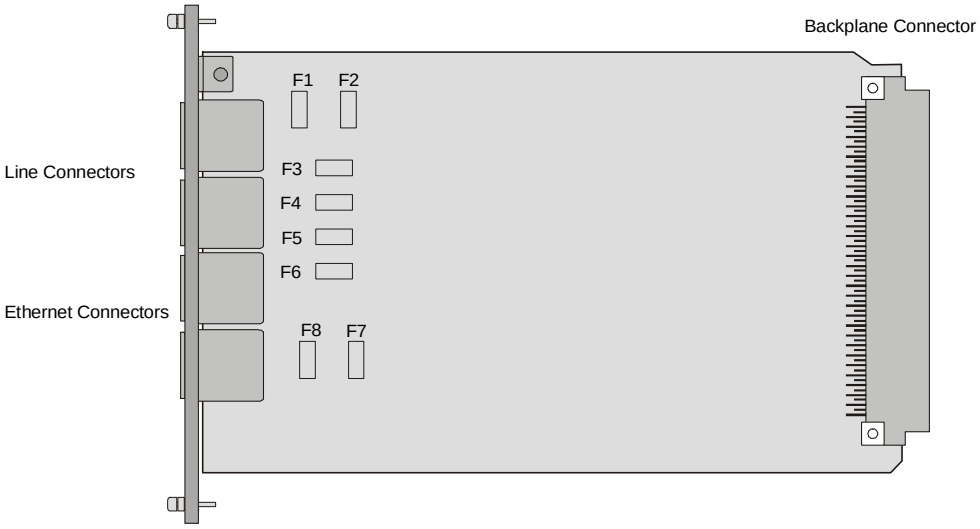


Figure F-4. LRSI-F-14 Interface Module Fuses

Hub Installation

➤ To install LRSI-F-14:

1. Insert the LRSI-F-14 module into the upper section of the LRS-24F chassis above the ASMi-52CD module, or into the back section of LRS-24B.
2. Fasten the screws to secure the module to the LRS-24 frame for proper grounding of the module panel.

Connecting the LRSI-F-14 Module

Table F-3 lists the pinout of the DCE-1/DCE-2 connector of the LRSI-F-14 interface module.

Table F-3. DCE-1/DCE-2 Connector Pinout

Pin	ID	Function	Direction
1	Tx+	Transmit – positive lead	Output
2	Tx–	Transmit – negative lead	Output
3	Rx+	Receive – positive lead	Input
4, 5	–	Not connected	–
6	Rx–	Receive – negative lead	Input
7, 8	–	Not connected	–

When connecting LRSI-F-14 to the LAN, use a cross cable for connection to a port that does not implement the crossover function internally. Otherwise, use a straight cable.

Note *Hubs usually do implement the crossover function internally while NICs and other devices do not.*

LED Indicators

Table F-4 lists the IR-ETH/QN rear panel LED indicators and describes their functions.

Table F-4. LED Indicators

LED Name	Color	Description	Location
LINK	Green	ON – LAN link is ON	Connector
ACT	Yellow	ON or blinking – LAN is receiving data	Connector

Fault Propagation

IR-ETH/QN has a fault propagation option. This feature propagates the line interface side error conditions to the Ethernet port.

Fault propagation disables the Ethernet interface link when a control signal is not received from the line interface. The signal causes the Ethernet interface link to fall hence loosing the Ethernet interface link integrity.

Configuring Fault Propagation

➤ To enable or disable fault propagation:

1. Go to the **Modem Setup** window in the terminal screen.
3. Select FAULT ETH INDICATION and set to **Yes** or **No**.

```
      MODEM SETUP
      ___________________________________
             MODEM NAME    :  ASMI-52CD-ETH
DEFINE MODEM PORT NUMBER   : 1
MODEM STATUS               : MASTER PERMANENT
SELECT MODEM               : MODEM 1 LOCAL
SYNC/ASYNC             : N/A              CHARACTER LENGTH      :N/A
No. STOP BIT           : N/A              DATA RATE             :1792K
PARITY                 : N/A              CD SENSE              :N/A
CLOCK SOURCE LOC/REM   : SYS              EXT SOURCE  :Modem #1 PORT :N/A
INTERFACE              : N/A              RTS/CTS DELAY (0:255) :N/A
RTS TO DCD             : N/A              DTR TO DSR            :N/A
OUTPUT LEVEL           : N/A              INPUT LEVEL           :N/A
OUTPUT IMPEDANCE       : N/A     ohm      INPUT IMPEDANCE       :N/A    ohm
CARRIER CONTROL        : N/A              ERROR CORRECTION      :N/A
RATE ADAPATION METHOD  : N/A              AIS                   :N/A
LINE CODING            : N/A              PHANTOM               :N/A
T1 LINE LENGTH         : N/A              FAULT ETH INDICATION  :YES
BRIDGING               : N/A              ETHERNET MODE         :N/A
MASK SIGNAL STATUS     : N/A   DATA:NO   RTS :NO   TD :NO   RD:NO
                               DCD :NO   TEST:NO   ERR:NO   SQ:NO   LOS:NO
NEXT PARAMETERS(E1):   NO                NEXT PARAMETERS(LINE): NO
```

Figure F-5. Modem Setup (Fault Propagation) Screen

Appendix G

IR-IP Interface Card

G.1 Introduction

Overview

IR-IP is a high-performance, miniature IP router based on RAD's unique IP router chip, the ChipRouter. The router interface can operate in either half-duplex or full-duplex mode.

IR-IP filters the traffic, in accordance with the IP address of each packet, and forwards through the WAN link only packets with foreign addresses. IP packets received from the link are automatically forwarded to the LAN connected to the local Ethernet interface if the IP net matches.

IR-IP includes hardware filters which handle all filtering operations at wire speed from both LAN-to-WAN and WAN-to-LAN, without dropping a single packet. Filtering and forwarding are performed at the maximum rate of 35,000 and 30,000 frames per second (wire speed), respectively. The buffer can hold 256 frames of maximum size of 1534 bytes and a throughput latency of one frame.

IR-IP is available with 10BaseT (UTP) interface and is fully IEEE 802.3/Ethernet II compliant. The IR-IP interface can also operate in full duplex Ethernet applications.

ASMi-52CD equipped with IR-IP interface module can be used as a Frame Relay Access Device (FRAD) with an integral IP router. RFC 1490 is supported for a single DLCI on the WAN link. Detection of the DLCI and the maintenance protocol is performed automatically. This allows the IR-IP to be used as the termination unit of IP services over Frame Relay at the customer premises, opposite a Frame Relay switch in the backbone.

Alternatively, Point-to-Point Protocol (PPP) can be run on the WAN link with automatic negotiation on power-up, as well as support for PAP and CHAP authentication. With this feature, IR-IP can operate opposite any PPP compliant access server or backbone router.

IR-IP supports HDLC-like framing, which is especially important for broadcast and multicast applications where bandwidth overhead is critical.

IR-IP supports IP multicast at wire speed, making it suitable for any multicast environment including high speed downstream environments, such as satellite and xDSL. Users on the LAN who register with IR-IP for an IP multicast group using the IGMP protocol filter IP multicast packets at wire speed.

Management and advanced configuration are performed via Telnet.

Application

Figure G-1 shows a typical application of the ASMi-52CD modem equipped with the IR-IP card.

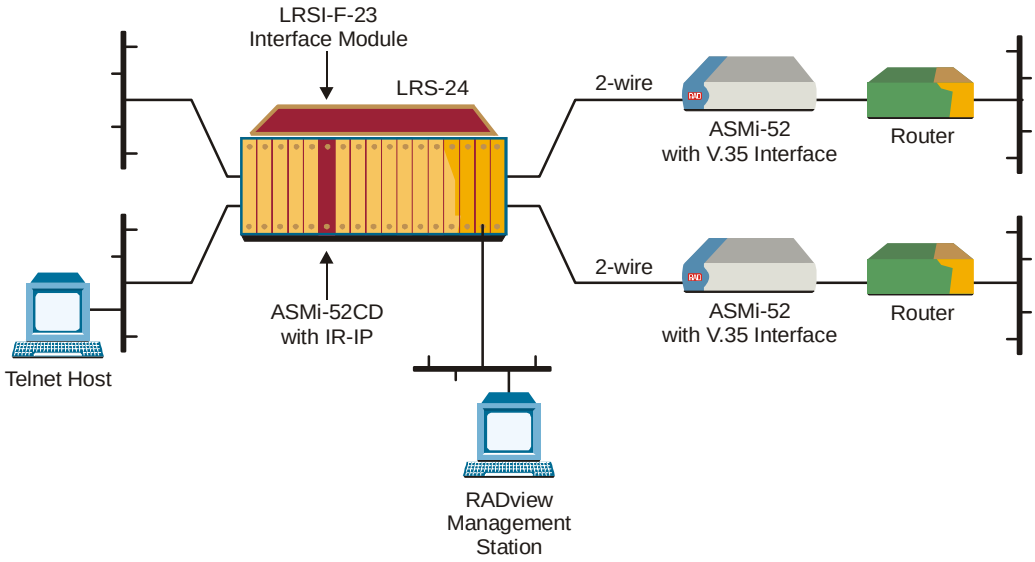


Figure G-1. Typical Application of the ASMi-52CD Unit with IR-IP

Physical Description

The IR-IP Ethernet card (see *Figure G-2*) is mounted on top of the ASMi-52CD main board. It contains a 6-section DIP switch described below.

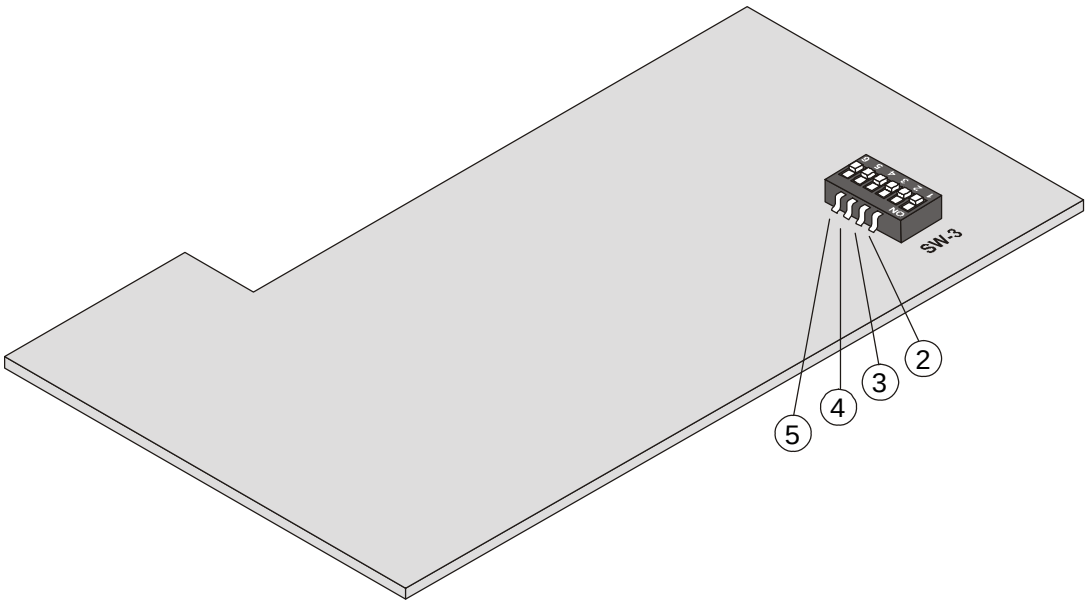


Figure G-2. IR-IP DIP Switch

DIP Switch Settings

Table G-1. IR-IP DIP Switch Functions

No	Function	Values (Default settings in bold)
1	N/A	–
2	Controls the remote WAN test loopback, which returns packets received from the WAN back toward the WAN	ON – The test loop is activated **OFF** – The test loop is disabled
3	Selects the LAN mode	ON – Full duplex operation **OFF** – Half duplex operation
4	Selects the WAN protocol	ON – PPP protocol **OFF** – Frame Relay protocol
5	N/A	–
6	Allows the user to operate the module in case the IP address and/or Telnet password are forgotten	ON – Forces the default IP address and no password protection **OFF** – IR-IP operates as configured

G.2 Technical Specifications

Router	*Local IP Net Capacity*	Supports up to 256 hosts on the local LAN IP net
	Filtering Rate	35,000 packets per second
	Forwarding Rate	30,000 packets per second
	Buffer	256 frames (maximum size – 1534 bytes)
	Delay	1 frame
LAN	*Standard*	Conforms to IEEE 802.3/Ethernet II
	Data Rate	10 Mbps
	Interface Type	10BaseT for use on UTP and STP media, terminated in RJ-45 shielded eight-pin connector
WAN	*Protocols*	• PPP (PAP/CHAP) • Frame Relay (RFC 1490) • HDLC-like framing
	Operation Mode	Full duplex or half duplex user-selectable
	Configuration	Telnet, through the 10BaseT interface

G.3 Installation and Operation

This section describes:

- Installing the IP card on the ASMi-52CD modem module
- Installing LRSI-F-23/LRSI-B-23 interface module in the LRS-24 hub.

For hub installation and operation of the ASMi-52CD module, see *Chapter 2* of this manual.

Installing the IR-IP Ethernet Card

Caution ASMi-52CD and IR-IP Ethernet cards contain components sensitive to electrostatic discharge (ESD). To prevent ESD damage, do not touch the module components or connectors.

➤ **To install the IR-IP Ethernet card on ASMi-52CD:**

1. Set the 6-section DIP switch according to *Table G-1.*
2. Press the IR-IP Ethernet card, with connectors facing down, against the ASMi-52CD module connectors.

Installing the LRSI-F-23 Interface Module

➤ **To install the LRSI-F-23 interface module in LRS-24:**

1. Check that the LRSI-F-23 or LRSI-B-23 interface module was supplied (see *Figure G-3)*.
2. Insert the LRSI-F-23 module in the LRS-24 hub upper section above the ASMi-52CD module, or LRSI-B-23 module in the LRS-24 hub back section behind the ASMi-52CD module.
3. Fasten the screws to secure the module to the LRS-24 frame for proper grounding of the module panel.
4. Connect the LRSI-F-23 IR-IP connector to the LAN.

Cabling

➤ **To connect the LRSI-F-23 IR-IP connector to the LAN:**

- Use either a straight or a cross cable to connect the LRSI-F-23 IP-1 (IP-2) connector to the LAN. Use a cross cable when connecting to a port that does not implement the crossover function internally. Otherwise, use a straight cable.

  Use *Table G-2* for the pin assignment of the IP-1 (IP-2) RJ-45 connector needed when preparing the LAN cable. For pin assignment of the LRSI-F-23 line connector, see *Chapter 2.*

Note *Hubs usually do implement the crossover function internally while NICs and other devices do not.*

Table G-2 provides the pinout of the IR-IP IP-1 (IP-2) RJ-45 connector.

Table G-2. RJ-45 Pinout

Pin	Name	Function
1	TD (+)	Transmit data positive
2	TD (–)	Transmit data negative
3	RD (+)	Receive data positive
6	RD (–)	Receive data negative

IR-IP LEDs

The LRSI-F-23 (or LRSI-B-23) interface module contains two LEDs, which indicate module activity. *Table G-3* lists the LEDs functions.

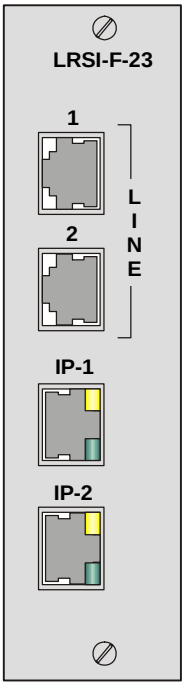


Figure G-3. LRSI-F-23 Interface Module

Table G-3. IR- IP Interface Indicators

LED Name	Function	Color
LINK	ON – Ethernet interface is connected to an active LAN	Green
ACT	Blinks – Transmit and/or receive activity is present on the Ethernet interface	Yellow

G.4 IR-IP Management Subsystem, General

Introduction

The IR-IP card management subsystem supports the following functions:

- Preliminary configuration
- Configuration of management access parameters
- Advanced configuration of IR-IP parameters
- Collection and display of statistical performance data
- Maintenance functions, which include:
  - Software downloading
  - Resetting of various subsystems
  - Display of error log
  - Ping utility, for checking IP connectivity.

The management subsystem of the IR-IP interface module is a separate, independent entity, and therefore it cannot be managed through the ASMi-52CD management subsystem.

The communication with the IR-IP management subsystem is made through the local LAN interface connector of the IR-IP module, designated 10BASE-T, using the Telnet protocol. Passwords can be used to prevent unauthorized access.

Accessing the IR-IP Management Subsystem

The IR-IP Ethernet card must be configured in accordance with the specific requirements of the user's application before it can be used in the user's network. As a result, it is not possible to supply default parameters to enable IR-IP to start service without any preliminary configuration.

Therefore, to enable the user to establish Telnet communication and configure IR-IP, IR-IP is delivered with a factory-default set of parameters. The factory-default parameters are automatically used:

- Before IR-IP is configured by the user, e.g., when a new ASMi-52CD with IR-IP card is put into operation
- After the user's configuration parameters have been erased.

After configuring IR-IP, it starts normal operation and routes the traffic in accordance with the user-selected configuration parameters.

To change the parameters of an already-configured IR-IP, establish communication from a Telnet host using the assigned IP address.

Default IP Communication Parameters

The factory-default IP communication parameters of the interface module are:

- The default IP address of the IR-IP Ethernet port is 192.168.205.1, and the default IP subnet mask is 255.255.255.252.
- The port will accept IP communication only from the IP address 192.168.205.2. Therefore, as long as the factory defaults are in effect, you must assign this address to the Telnet host used to configure IR-IP.

Using the IP learning mechanism, as explained below you can change the default parameters.

Note *In the default configuration, the IR-IP WAN interface is disabled. In order to enable the WAN interface, you have to modify the Ethernet port address or the IP subnet mask.*

Rescue Configuration

In case you have forgotten the IP address or the Telnet password, you will generally not be able to view or modify the IR-IP configuration. The Rescue feature allows you to overcome this problem.

➤ To allow the IR-IP configuration:

1. Remove the ASMi-52CD modem card from the chassis.
2. Set section 6 of the DIP switch to ON.
3. Insert ASMi-52CD back into the chassis.

   As soon as the interface module is powered on, it will respond to the default IP address and permit entering configuration screens without password protection. All the other configuration parameters remain unchanged.
4. After setting the parameters to desired values, remove ASMi-52CD from the chassis and restore section 6 of the DIP switch to OFF.

G.5 Performing Preliminary Configuration

The software necessary for performing all the management and configuration functions is stored in the IR-IP card, and therefore you only need a regular Telnet host to perform all the activities described in this appendix.

A Telnet host is any computer, e.g., an IBM PC or compatible that fulfills the following minimum requirements:

- A standard 10BaseT Ethernet interface
- A TCP/IP protocol stack, and therefore is capable of supporting IP communication through the Ethernet interface
- Telnet client software
- A ping utility.

Outline of Preliminary Configuration

➤ To perform the preliminary configuration procedure:

1. Connect the Telnet host to the LRSI-F-23 interface module.
2. Configure the Telnet host to enable communication with the IR-IP using the default IP parameters.
3. Establish communication with IR-IP and assign the prescribed IP address to its LAN interface.
4. Establish again communication with IR-IP and continue the preliminary configuration in accordance with the *Quick Setup Menu* section below.

Connecting the Telnet Host

Before starting the management and configuration activities, it is necessary to establish IP communication between your Telnet host and the IR-IP. For this purpose, it is necessary to provide a communication path.

Because of the method used to assign an IP address to IR-IP Ethernet port, it is recommended to connect the Telnet host directly to the LRSI-F-23 10BASE-T connector. This is made by connecting an Ethernet cross cable between the Ethernet connector of the Telnet host and the IP-1 (IP-2) connector.

However, you may also connect through a common LAN: in this case, connect your Telnet host and LRSI-F-23 to Ethernet hub ports using straight cables.

Preliminary Telnet Host Configuration

If you prefer to use the factory-default parameters to establish IP communication between your Telnet host and IR-IP, configure the Telnet host as follows:

1. Temporarily configure the host IP address as 192.168.205.2.
2. The initial destination IP address to be used by the host is 192.168.205.1.

Note *The first step in the preliminary configuration process is to assign the desired IP address to the LAN interface of the IR-IP interface module.*
After an IP address is assigned and saved, you must change the destination IP address of the Telnet host to the new address, otherwise it is not possible to continue the configuration process. At the same time, you can also change the temporary IP address assigned to the host (192.168.205.2) back to its permanent address.

What to Do If ...

➤ The LINK indicator does not light immediately after ASMi-52CD is turned on

IR-IP does not receive power from ASMi-52CD. Service is required.

➤ The ACT indicator does not light, and there is no response from IR-IP

No software loaded into IR-IP. Download software using the procedure described in the *New Software Download Menu* section below.

➤ **After turn-on, the ACT indicator lights from time to time, but there is no response from IR-IP**

IR-IP has been configured. If you do not know the current IP address of the LAN interface, follow the rescue procedure described in *Rescue Configuration* section above.

➤ **No ping replies from IR-IP**

If your host does not begin to receive **ping** replies after three unsuccessful attempts, check the physical connection path between the Telnet host Ethernet interface and the LRSI-F-23 IP-1 (IP-2) connector.

G.6 IR-IP Management Utility

General Operating Procedures

The IR-IP interface module is managed via a simple, menu-driven utility that uses a basic terminal user interface. A typical screen is shown in *Figure G-4*.

As seen in *Figure G-4*, each screen has a header that identifies the device being configured and its logical name, assigned by the user, followed by the running software revision and date. The bottom line of the screen displays prompts that guide you in the execution of the various activities.

Use the following general procedures to perform the desired activity:

- To change a parameter or to select a menu item, type the corresponding line number.
- For a parameter, which has a discrete set of values, the parameter values are enclosed in brackets [ ]. To select a new value, press the spacebar to scroll among the available values until the desired value is displayed, and then press **‹Enter›** to select the displayed value.
- To enter a value which requires free text entry, type in the desired string and then press **‹Enter›**. Use backspace to erase the current string.
- After all the parameters have been selected, a prompt appears, requesting that you confirm the changes.

Note *For proper display of the screens, you must:*

- *Select a fixed-pitch system font for the display. Use your operating system documentation to find how to select a proper font.*
- *Configure the Telnet utility to use VT-100 terminal emulation.*

Starting a Management Utility

The management utility is started automatically when Telnet communication is established. If password protection is enabled (see the *Management Access Menu* section below), you will be prompted to enter the Telnet password. The opening screen, which appears after the Telnet session activation, is the IR-IP Main menu (see *Figure G-4*).

```
IR_IP                          <IR-IP>                    S/W Ver. 1.21 (date)

1. Quick Setup
2. Management Access
3. Advanced Setup
4. Device Control
5. View
6. Diagnostic Tool (PING terminal)

Press one of the numbers to select or ESC:
```

Figure G-4. IR-IP Main Menu

To end the utility, press **<Esc>** when the Main menu is displayed. This will also end the Telnet session.

Menu Structure of Management Utility

Figure G-5 shows the menu structure of the IR-IP management utility.

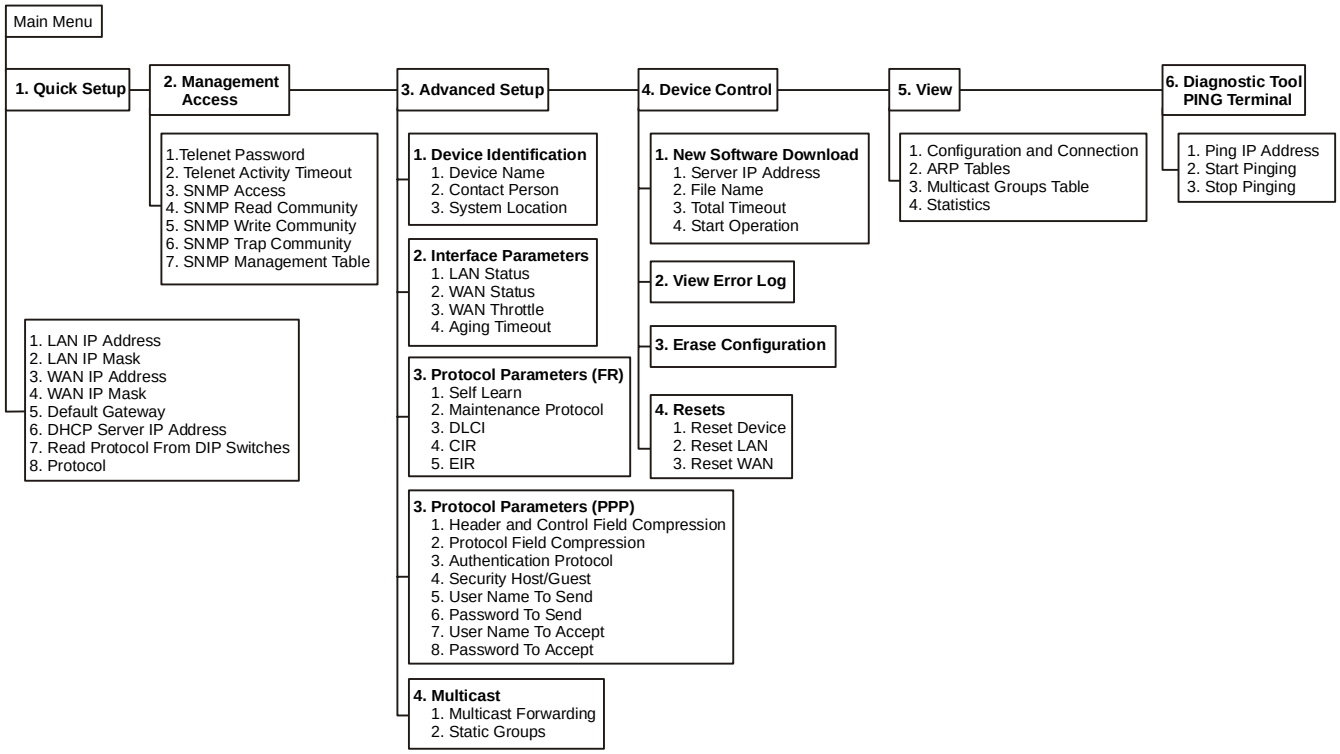


Figure G-5. Management Utility, Menu Structure

G.7 Quick Setup Menu

The Quick Setup menu is used to select the main parameters' values that must be defined before you start using IR-IP.

Use the Advanced Setup menu (see the *Advanced Setup Menu* section below) to specify values for other IR-IP configuration parameters not included in this menu.

➤ **To access the Quick Setup menu:**

- From the Main menu, type **1**.

  The Quick Setup menu appears (*Figure G-6*).

```
IR_IP                          <IR-IP>                          S/W Ver. 1.21
(date)
Quick Setup
=====================================================================
1. LAN IP Address                                        :192.168.100.001
2. LAN IP Mask                                           :255.255.255.000
3. WAN IP Address (empty for unnumbered)                 :...............
4. WAN IP Mask (empty for unnumbered)                    :...............
5. Default Gateway (empty - WAN interface)               :...............
6. DHCP Server IP address (empty for relay disabled)     :...............
7. Read Protocol From DIP Switches                       :[ Yes ]
8. Protocol                                              :[ Frame Relay ]

Press one of the numbers to select or ESC:
```

Figure G-6. Quick Setup Menu

LAN IP Address

Used to enter the IP address for the IP router LAN interface. This is the address to which nodes connected to the local LAN send packets addressed to the WAN.

LAN IP Mask

Used to enter the IP subnet mask. The IP router supports a maximum of 254 hosts on the LAN, therefore you must use Class C subnet masks. The basic subnet IP mask for Class C addresses, which supports the maximum possible number of hosts, 254, is 255.255.255.0. To help you understand the selection of IP subnet masks, *Figure G-7* provides a configuration example for a LAN with 6 nodes: the IP subnet mask for a 6-node IP network is 255.255.255.248.

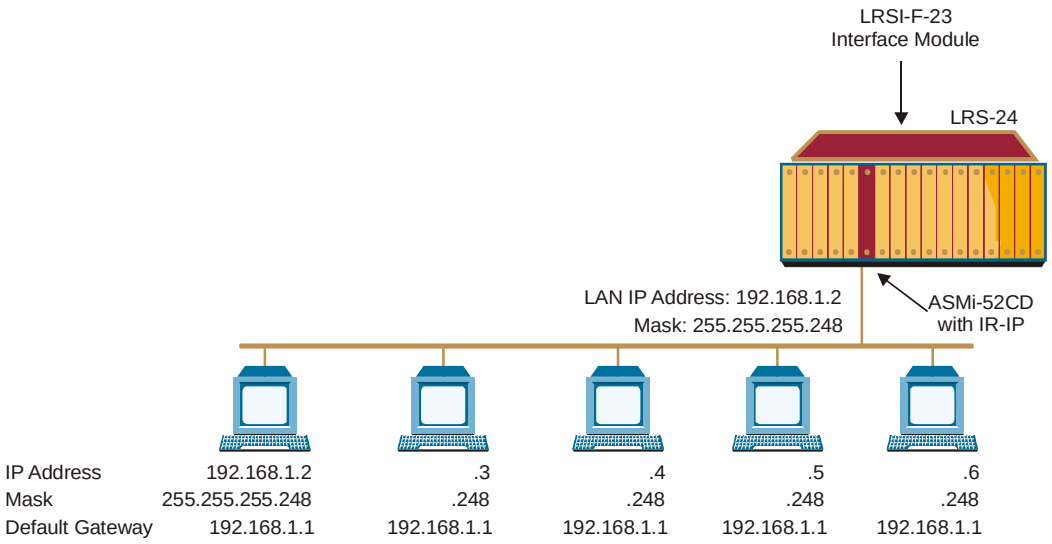


Figure G-7. Selecting the IP Subnet Mask

WAN IP Address

Used to enter the IP address for the IR-IP WAN interface, i.e., the IP address to be used by IP hosts on the WAN to reach this IR-IP interface module.

If the WAN IP Address field remain blank, IR-IP operates in the Unnumbered Router Mode.

WAN IP Mask

Used to enter the IP subnet mask for the WAN interface.

Default Gateway

Operation without Default Gateway

The IP interface module is intended to enable the extension of LANs through the SHDSL link. Therefore, its default routing operation is different from the default routing operation of standard IP routers:

- IR-IP forwards packets with destinations not located on the local LAN through the WAN interface
- Packets received from the WAN interface and destined to hosts located on the local LAN are forwarded to the LAN; other packets are discarded.

The default operation is used when the Default Gateway field is blank.

Operation with Default Gateway

You can instruct IR-IP to send packets with destinations not located on the local LAN to a specific router, which is called the **default gateway**. The default gateway must be connected to the local LAN.

To use this option, enter the IP address of another router attached to the local LAN in the Default Gateway field.

Note *It is very important to obtain the correct parameters from the system administrator or ISP. The most common problem when establishing an IP connection is incorrect configuration of IP parameters and default gateway. Do not try to guess these parameters.*

DHCP Relay

IR-IP can operate as a DHCP relay for computers on its LAN. In this mode, the user does not need to configure the IP addresses and other related parameters for the PCs on the LAN: they receive the configuration from the DHCP server via the IR-IP module.

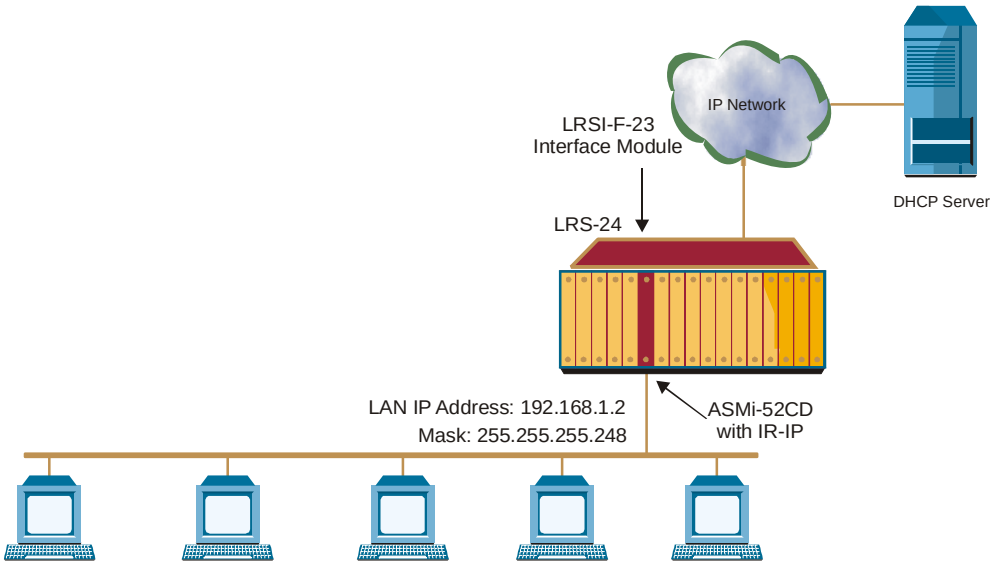


Figure G-8. Selecting the IP Subnet Mask

➤ **To configure the IR-IP as a DHCP relay:**

- Enter the IP address of the DHCP server in this field.

  Leaving this field blank disables the DHCP relay operation.

Reading Protocol from DIP Switches

Selecting YES for this parameter forces IR-IP card to use the WAN protocol selected by section 4 of its DIP switch: PPP or Frame Relay.

If you want to be able to select the WAN protocol by means of the Protocol field (parameter 7) of the Quick Setup menu, select NO.

Protocol

Used to select the WAN protocol to be used by the IP card: PPP, HDLC or Frame Relay.

This parameter is available only if the Read Protocol from DIP Switches parameter is set to NO.

G.8 Management Access Menu

The Management Access menu is used to enable the use of passwords to protect the access to IR-IP management utility, and control the inactivity time-out interval.

When password protection is enabled, a Telnet management session can start only after the correct password is entered.

➤ To access the Management Access menu:

- From the Main menu, type **2**.

The Management Access menu appears (*Figure G-9*).

```
IR_IP                        <IR-IP>                    S/W Ver. 1.21 (date)

Quick Setup
Management Access
=====================================================================
            1. Telnet Password                    :..........
            2. Telnet Inactivity Timeout (min)    :300..
            3. SNMP Access                        :Disabled
            4. SNMP Read Community                :public....
            5. SNMP Write Community               :public....
            6. SNMP Trap Community                :public....
            7. SNMP Management Table              :>>>

Press one of the numbers to select or ESC:
```

Figure G-9. Management Access Menu

Note *Since the IP router card does not support SNMP management, the SNMP Read Community, SNMP Write Community, SNMP Trap Community, and SNMP Management Table parameters are not used.*

Telnet Password

By default, management access to IR-IP via Telnet is unrestricted. To restrict access, enter a Telnet password by selecting **1** in the Management Access menu. The password can include up to 10 characters, and is case-sensitive. The next time a Telnet session is opened, a password must be entered to enable you to access the IR-IP menus.

At any time, only one Telnet connection to IR-IP is permitted. Any attempt to open an additional connection while the current session is open is rejected.

Telnet Inactivity Timeout

This parameter specifies the time a Telnet session is kept open when there is no keyboard activity. When the specified time-out expires, the Telnet session is closed and another user can access IR-IP.

G.9 Advanced Setup Menu

The Advanced Setup menu is used to select the desired group of IR-IP configuration parameters.

The parameters accessed through Advanced Setup menu supplement the parameters available on the Quick Setup screen, by providing control over all the other IR-IP parameters.

➤ To access the Advanced Setup menu:

- From the Main menu, press **3**.

  The Advanced Setup menu appears (*Figure G-10*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
=====================================================================
     1. Device identification
     2. Interface Parameters
     3. Protocol Parameters
     4. Multicast IP

Press one of the numbers to select or ESC:
```

Figure G-10. Advanced Setup Menu

Device Identification Menu

The Device Identification menu is used to define and store in the IR-IP logistic information: the logical name of IR-IP, information on the contact person and device location.

➤ To access the Device Identification menu:

- From the Advanced Setup menu, type **1**.

  The Device Identification menu appears (*Figure G-11*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
.....................................................................
     Device identification
=====================================================================
     1. Device Name                          :IR-IP..
     2. Contact Person                       :Name of contact Person
     3. System Location                      :The location of this device

Press one of the numbers to select or ESC:
```

Figure G-11. Device Identification Menu

Device Name

Select this parameter to assign an arbitrary name to IR-IP for identification by the system manager (up to eight characters). The assigned name is displayed in the screen header.

Contact Person

Select this parameter to enter the name of the person to be contacted with matters pertaining to this equipment unit.

System Location

Select this parameter to enter the physical location of the device.

Interface Parameters Menu

The Interface Parameters menu is used to control the operation of IR-IP interfaces.

➤ To access the Interface Parameters menu:

- From the Advanced Setup menu, type **2**.

  The Interface Parameters menu appears (*Figure G-12*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
.................................................................
     Device identification
     Interface Parameters
=================================================================
     1. LAN Status                                    :[ Open  ]
     2. WAN Status                                    :[ Open  ]
     3. WAN Throttle                                  :[ Full  ]
     4. Aging Timeout (min)                           :5.

Press one of the numbers to select or ESC:
```

Figure G-12. Interface Parameters Menu

LAN Status

Used to enable/disable the flow of packets through LAN interface:

- Open – the flow of packets is enabled.
- Closed – the flow of packets is disabled. As a result, IR-IP does not accept, nor sends packets to the LAN, but its WAN interface may still be active, and can interact with other IP hosts on the WAN.

WAN Status

Used to enable/disable the flow of packets through the WAN interface:

- Open – the flow of packets is enabled.
- Closed – the flow of packets through the WAN interface is disabled. As a result, IR-IP does not accept from, nor sends packets to the WAN. However, the LAN interface of the IP router is still active.

WAN Throttle

This parameter specifies the maximum data rate at which frames are sent to the WAN (i.e., to the SHDSL link).

The available selections are:

- 64 kbps
- 128 kbps
- 256 kbps
- 512 kbps
- 1024 kbps
- Full (no restriction on the rate).

Since the IP router buffers have a limited capacity (256 frames), it is recommended to select the WAN Throttle parameter in accordance with the line rate.

Aging Timeout

Used to specify the time after which inactive LAN stations are removed from the IR-IP ARP table.

A station is defined as inactive when no IP traffic is received from it by the IR-IP LAN interface.

WAN Protocol Parameters – Frame Relay Protocol Menu

The Frame Relay Protocol Parameters menu is used to configure the parameters Frame Relay WAN for protocol (the WAN protocol is selected by means of the *Quick Setup Menu*) in *Figure G-6*.

➤ To access the Protocol Parameters menu:

- From the Advanced Setup menu, type **3**.

Self Learn

Used to specify whether the Frame Relay DLCI and maintenance protocol is learned automatically (ENABLED), or is manually entered (DISABLED).

Maintenance Protocol

When the Self Learn parameter is DISABLED, use this parameter to specify the desired maintenance protocol.

DLCI

When the Self Learn parameter is DISABLED, use this parameter to specify the DLCI used for exchanging maintenance protocol messages.

CIR

Used to specify the maximum amount of data, in bits, which the Frame Relay network guarantees to transfer during the measurement interval (the measurement interval is usually one second).

The value of this parameter is obtained from your Frame Relay service provider.

EIR

Used to specify the maximum amount of data, in bits, that the Frame Relay network will attempt to deliver during the measurement interval. The value of this parameter is obtained from the Frame Relay service provider.

A typical Frame Relay Protocol Parameters menu is shown in *Figure G-13*.

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
.....................................................................
     Device identification
     Interface Parameters
     Protocol Parameters
=====================================================================
     1. Self Learn                                  :[ Enabled  ]
     2. Maintenance Protocol                        :[ ANSI T1.617 ANNEX D ]
     3. DLCI (0-None)                               :0..
     4. CIR                                         :0.......
     5. EIR                                         :64000...

Press one of the numbers to select or ESC:
```

Figure G-13. Frame Relay Protocol Parameters Menu

WAN Protocol Parameters – PPP Protocol Menu

The PPP Protocol Parameters menu is used to configure the parameters PPP WAN for protocol (the WAN protocol is selected by means of the (the WAN protocol is selected by means of the *Quick Setup Menu*) in *Figure G-6*.

➤ To access the Protocol Parameters menu:

- From the Advanced Setup menu, type **3**.

Header and Control Field Compression

Used to control the use of header and control field compression type according to RFC 1661. It is strongly recommended that this compression be used for troubleshooting only.

Protocol Field Compression

Used to control the use of protocol field compression type according to RFC 1661. It is strongly recommended that this compression be used for troubleshooting only.

Authentication Protocol

Used to select the authentication protocol used by an IP router configured as host to validate incoming connections.

Security Host/Guest

This option can be used to configure the IP router either as a guest unit, to be authenticated by another router, or as a host unit, that authenticates other routers.

User Name To Send

The name by which an IP router card configured as guest identifies itself.

Password To Send

The password by which an IP router card configured as guest identifies itself.

User Name To Accept

The user name to be accepted by an IP router configured as host, when an incoming connection request is received.

Password To Accept

The user password to be accepted by an IP router configured as host, when an incoming connection request is received.

A typical PPP Protocol Parameters menu is shown in *Figure G-14*.

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
.....................................................................
     Device identification
     Interface Parameters
     Protocol Parameters
=====================================================================
     1. Header and Control Field Compression         :[ No  ]
     2. Protocol Field Compression:                  :[ No  ]
     3. Authentication Protocol                      :[ NONE/NONE  ]
     4. Security Host / Guest                        :[ Guest  ]
     5. User Name To Send                            :.................
     6. Password To Send                             :.................
     7. User Name To Accept                          :.................
     8. Password To Accept                           :.................

Press one of the numbers to select or ESC:
```

Figure G-14. PPP Protocol Parameters Menu

Multicast IP Menu

The Multicast IP menu is used to specify the IP multicast frame forwarding parameters, and to access the static multicast groups' table.

➤ To access the Multicast IP menu:

- From the Advanced Setup menu, press **4**.

  The Multicast IP menu appears (*Figure G-15*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
.....................................................................
     Device identification
     Interface Parameters
     Protocol Parameters
     Multicast IP
=====================================================================
     1. Multicast forwarding                          :[ Disabled ]
     2. Static groups                                 :>>>

Press one of the numbers to select or ESC:
```

Figure G-15. Multicast IP Menu

Multicast Forwarding

Used to control the forwarding of IP multicast frames. The following selections are available:

- DISABLED – Disables multicast forwarding in both directions.
- LAN to WAN – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, from the LAN to the WAN.
- WAN to LAN – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, from the WAN to the LAN.
- BIDIRECTIONAL – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, in both directions.
- WAN to LAN + IGMP – Enables forwarding of IP multicast frames addressed to groups appearing in the Static Multicast Groups table, from the WAN to the LAN. In addition, more groups can be added dynamically (the additional can be viewed using the View menu – *Figure G-20*).
- TRANSPARENT – All the IP multicast frames are forwarded, irrespective of the Static Multicast Groups table.

Static Groups

Select this parameter to access the static multicast groups table. The table is used to specify the IP addresses for up to 10 IP multicast groups. You can add, change, or delete each entry in the table (see the prompt line).

➤ To access the Static Groups menu:

- From the Multicast IP menu, type **2**.

  The following screen appears:

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

                         Static Multicast Groups Table
                         -----------------------------
   Group IP Address
1.  ................
2.  ................
3.  ................
4.  ................
5.  ................
6.  ................
7.  ................
8.  ................
9.  ................
10. ................

Press 'A'-add, 'E'-edit, 'D'-delete, 'C'-clear all, 'ESC'-exit:
```

Figure G-16. Static Multicast Groups Table

G.10 Device Control Menu

The Device Control menu is used to download software from TFTP servers and perform interface and device resets.

➤ To access the Device Control menu:

- From the Main menu, type 4.

  The Device Control menu appears (*Figure G-17*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
------------------------------------------------------------
     1. New Software Download
     2. View error LOG
     3. Erase configuration
     4. Resets

Press one of the numbers to select or ESC:
```

Figure G-17. Device Control Menu

New Software Download Menu

IR-IP operates as a TFTP client, and therefore it is possible to update its software by downloading new software from another computer that operates as a TFTP server.

The New Software Download menu is used to specify the software downloading parameters.

➤ To access the New Software Download menu:

- From the Device Control submenu, type **1**.

New Software Download menu appears (*Figure G-18*).

```
IR_IP                      <IR-IP>            S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
Device Control
.....................................................................
     New Software Download
=====================================================================
     1. Server IP Address                              :..............
     2. File Name                                      :...................
     3. Total Timeout (sec)                            :..
     4. Start operation                                :>>>
Press one of the numbers to select or ESC:
```

Figure G-18. New Software Download Menu

Server IP Address

Used to enter the IP address of the TFTP server.

File Name

Used to enter the name and path of the file to be transferred from the TFTP server.

Total Timeout

Used to enter the time IP router should wait for an acknowledgment from the TFTP server, for example 60 seconds.

Start Operation

After selecting all the necessary parameters, type **4** on the New Software Download screen and then press **<Enter>** to start the downloading.

You can follow the progress of the downloading process (indicated by arrows).

Upon completion of the download process, the unit performs a reset. The Telnet connection is lost and must be restarted if required.

View Error Log Screen

This item of the Device Control submenu is used to view the error log file. This file logs errors detected in IR-IP for debug and technical support purposes.

Erase Configuration

Selecting this item allows you to reset *all* the configuration parameters to their default values.

Note

- *Do this only if you need to reconfigure the module anew (all the parameters).*
- *After erase confirmation all connections with the IR-IP module will be lost. For instructions on further configuration, refer to Performing Preliminary Configuration on page G-7.*

Resets Menu

The Resets menu allows you to perform reset of IR-IP, or its interfaces.
This operation can be used to restore normal operation after service is disrupted by an abnormal condition. Any data stored in the IR-IP buffers is discarded, and the flow of traffic is temporarily interrupted.

➤ To access the Resets menu:

- From the Device Control menu, type **3**.

The following screen appears:

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
.....................................................................
     New Software Download
     View error LOG
     Erase configuration
     Resets
=====================================================================
     1. Reset Device
     2. Reset LAN
     3. Reset WAN
Press one of the numbers to select or ESC:
```

Figure G-19. Resets Menu

Reset Device

➤ To restart IR-IP:

- From the Resets menu, type **1**.

You will be prompted to confirm the reset operation.

Note

Resetting the device will restart the IR-IP interface module, and therefore traffic flow is temporarily interrupted, and the Telnet connection is lost.

Reset LAN

➤ To reset the LAN interface:

- From the Resets menu, type **2**.

  You will be prompted to confirm the reset operation.

Note *This operation restarts the IR-IP LAN controller.*

To continue your Telnet session, press any key within 15 seconds following the confirmation of the reset operation.

Reset WAN

➤ To reset the WAN interface:

- From the Resets menu, type **3**.

  You will be prompted to confirm the reset operation.

Note *Resetting the WAN interface causes the WAN controller to be restarted. This results in renegotiation of the WAN protocol parameters.*

To continue your Telnet session, press any key within 15 seconds following the confirmation of the reset operation.

G.11 View Menu

The View menu is used to view the IR-IP configuration data, and display information on its ARP tables, multicast Groups tables and statistics.

➤ To access the View menu:

- From the Main menu, type **5**.

  The View menu appears (*Figure G-20*).

```
IR_IP                        <IR-IP>              S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
View
------------------------------------------------------------
     1. Configuration and Connection
     2. ARP Tables
     3. Multicast Groups Table
     4. Statistics
Press one of the numbers to select or ESC:
```

Figure G-20. View Menu

Configuration and Connection

This screen is used to view the configuration parameters of IR-IP. In addition, you can also view the current status of the LAN and WAN interface.

➤ To access the Configuration and Connection screen:

- From the View menu, type **1**.

The View Configuration screen appears (*Figure G-21*).

```
IR_IP                  <IR-IP>                          S/W Ver. 1.21 (date)


VIEW CONFIGURATION
------------------
BOOT Version           : 1.06  18.03.1999
Device Name            : IP router card
System Location        : The location of this device
Contact Person         : Name of contact Person

MAC Address            : 00-20-D2-16-3F-9B
Default Gateway        : WAN

Intrf Type  Baud(Kbps)   Prot   IP Address        IP Mask          Status
.....................................................................
LAN   UTP    -------     Ethr   192.168.205.005   255.255.255.000  Connected
WAN   V.110              FR                                       Not Conn.

Press any key to continue:
```

Figure G-21. View Configuration Screen

ARP Tables

This screen is used to display the IR-IP ARP table. This table shows the IP address assigned to each station on the LAN (the stations are identified by their MAC addresses).

➤ To access the ARP Tables screen:

- From the View menu, type **2**.

The ARP Tables screen appears (*Figure G-22*).

```
IR_IP                  <IR-IP>                      S/W Ver. 1.21 (date)

                                  ARP Table
                                  ---------
    IP Address          MAC Address          IP Address    MAC Address
    192.168.205.003     00-40-33-20-C8-3C

Press any key for exit
```

Figure G-22. ARP Tables Screen

Multicast Groups Table Screen

This screen is used to display information about the multicast group IP addresses and their status.

➤ **To access the Multicast Groups Table screen:**

- In the View menu, type **3**.

The Multicast Groups Table screen appears (*Figure G-23*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)

Multicast Groups Table
----------------------
     Group IP Address Status           Group IP Address Status
Press any key for exit
```

Figure G-23. Multicast Groups Table Screen

Statistics Screen

The Statistics screen is used to display statistical information on the traffic between the networks connected by IR-IP. The data displayed on this screen enables you to evaluate the IR-IP performance. Two different Statistics screens are used, one for the LAN side and the other for the WAN side.

➤ **To access the Statistics menu:**

- In the View menu, type **4**.

The LAN and WAN Statistics screens appear (*Figure G-24* and *Figure G-25*).

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)
                             SYSTEM STATISTICS
                             -----------------
    Counter Name               Val    Counter Name                 Val
LAN in Octets                83504   LAN IP Header Errors          0
LAN Unicast Frames In            1   LAN IP Address Errors         0
LAN Non-Unicast Frames In        9   LAN Alignment Errors          0
LAN Out Octets               83504   LAN CRC Errors                0
LAN Unicast Frames Out        3560   LAN Single Collisions         0
LAN Non-Unicast Frames Out       0   LAN Multiple Collisions       0
LAN to WAN Frames Passed      1698   LAN Late Collisions           0
LAN IP Datagram Received      2638   LAN Excessive Collisions      0
LAN to CPU Frames Discarded      0   LAN Frames Too Long Errors    0
LAN to WAN Frames Discarded      0   LAN RX FIFO Overrun Error     0
LAN Out Errors                   0   LAN SQE Transmitted           0
LAN RX Frames Errors             0   LAN Deferred Frames           1
LAN MAC Receive Errors           0   LAN Carrier Sense Lost        0
LAN MAC TX Errors                0   LAN FIFO Underrun             0

    N - Next Screen. ESC - Back To Previous Menu.
    R - Refresh Page. C - Clear The Counters Of This Page.
```

Figure G-24. LAN Statistics Screen

```
IR_IP                      <IR-IP>              S/W Ver. 1.21 (date)


                             SYSTEM STATISTICS
                             -----------------
    Counter Name               Val    Counter Name                 Val
WAN in Octets                83504   WAN Alignment Errors          0
WAN Out Octets                1950   WAN Aborted Frames            0
WAN Out Frames                1723   WAN Short Frames              0
WAN to LAN Frames Transfer    1698   WAN RX FIFO Overrun Error     0
WAN IP Datagram Received      1723   WAN to CPU Frames Errors      0
WAN to CPU Discarded             0   WAN Frame Too Long Errors     0
WAN to LAN Discarded             0   WAN IP Header Errors          0
WAN Out Errors                   0   WAN IP Addres Errors          0
WAN CRC Errors                   0

PPP Address Error                0
PPP Control Error                0
DLCI Unrecognized Error          0
Frame Relay Forward Conge        0
Frame Relay Backward Conge       0

    P - Previous Screen. ESC - Back To Previous Menu.
    R - Refresh Page. C - Clear The Counters Of This Page.
```

Figure G-25. WAN Statistics Screen

G.12 Diagnostic Tool (Ping Terminal) Menu

This section provides information on the diagnostic tool provided with IR-IP (the **ping** utility).

➤ **To access the Diagnostic Tools menu:**

- In the Main menu, type **6**.

  The Diagnostic Tools menu appears (*Figure G-26*).

```
IR_IP                <IR-IP>                      S/W Ver. 1.21 (date)
Quick Setup
Management Access
Advanced Setup
Device Control
View
Diagnostic Tools (PING terminal)
=====================================================================
    1. Ping IP Address                                :192.168.100.011
    2. Start Pinging                                  :>>>
    3. Stop Pinging                                   :>>>

Press one of the numbers to select or ESC:
```

Figure G-26. Diagnostic Tools Menu

Using the Ping Function

The Ping option is used to confirm IP connectivity by pinging other IP hosts. Connectivity is confirmed by receiving a reply from the remote (pinged) IP host.

➤ **To ping a host:**

1. From the Diagnostic Tools menu, type **1** and enter the desired host IP address.
2. Press **<Enter>** to confirm the destination IP address.
3. To start pinging, type **2** on the Diagnostic Tools screen.

   After pinging starts, you can monitor the **ping** status. A typical screen is shown in *Figure G-27*.

Note *After pinging is started, it continues in the background even if you exit the Diagnostics Tools screen. In this case, a Ping Running message appears in the top upper left-hand corner of the screen.*

4. To stop pinging, type **3** from the Diagnostic Tools menu.

   A **Ping Stopped** message is displayed.
   To clear the message and return to the Diagnostic Tools screen, press any key.

```
IR_IP                <IR-IP>                        S/W Ver. 1.21 (date)

Quick Setup
Management Access
Advanced Setup
Device Control
View
Diagnostic Tools (PING terminal)
=====================================================================
     1. Ping IP Address                                  :192.168.100.011
     2. Start Pinging                                    :>>>
     3. Stop Pinging                                     :>>>

Pinging 192.168.212.001 Sent 27 Recvd 25  Lost 2  Resp.Time 60 ms


Press one of the numbers to select or ESC:
```

Figure G-27. Diagnostic Tools Menu after Receiving Pinging Response

RAD data communications
Innovative Access Solutions

24 Raoul Wallenberg Street, Tel Aviv 69719, Israel
Tel: +972-3-6458181, Fax +972-3-6483331, +972-3-6498250
E-mail: erika_y@rad.com, Web site: http://www.rad.com

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Thank you for your assistance!

Manual Name: ASMi-52CD Ver. 1.0

Publication Number: 695-212-07/07

Please grade the manual according to the following factors:

	Excellent	*Good*	*Fair*	*Poor*	*Very Poor*
Installation instructions	❒	❒	❒	❒	❒
Operating instructions	❒	❒	❒	❒	❒
Manual organization	❒	❒	❒	❒	❒
Illustrations	❒	❒	❒	❒	❒
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What did you like about the manual?

_____

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Error Report

Type of error(s) or problem(s):

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- ❒ Regulatory information (Safety, Compliance, Warnings, etc.)
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International Headquarters

24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel. 972-3-6458181
Fax 972-3-6498250, 6474436
E-mail market@rad.com

North America Headquarters

900 Corporate Drive
Mahwah, NJ 07430, USA
Tel. 201-5291100
Toll free 1-800-4447234
Fax 201-5295777
E-mail market@radusa.com

www.rad.com

RAD
data communications
Innovative Access Solutions